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Social capital, agricultural technical assistance, access to productive resources, and food security in post-conflict Lira, northern Uganda

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Social capital, agricultural technical assistance, access to productive resources, and food security in post-conflict Lira, northern Uganda

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DEDICATION

To the victims of violent conflict and forced migration, may you one day find peace, justice, and happiness.

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LIST OF ACRONYMS

ACDI/VOCA	-	Cooperative Development International/Volunteers in Overseas Cooperative Assistance
ANOVA	-	Analysis of Variance
CBT	-	Community Based Trainers
CCF	-	Community Capital Framework
CSRL	-	Center for Sustainable Rural Livelihoods
FAO	-	Food and Agriculture Organization of the United Nations
GDP	-	Gross Domestic Product
GoU	-	Government of Uganda
HFIAS	-	Household Food Insecurity Access Scale
HFSSM	-	Household Food Security Survey Measure
IDMC	-	Internal Displacement Monitoring Center
IFAD	-	International Fund for Agricultural Development
LRA	-	Lord's Resistance Army
MDG	-	Millennium Development Goal
MFPED	-	Ministry of Finance, Planning and Economic Development
NGO	-	Non-governmental Organization
ROSCA	-	Rotating Savings and Credit Associations
SL	-	Sustainable Livelihoods
SPSS	-	Statistical Package for Social Science
SSA	-	Sub-Saharan Africa
UNDP	-	United Nations Development Program
UNHCR	-	United Nations High Commissioner for Refugees
USAID	-	US Agency for International Development

USDA	-	US Department of Agriculture
VEDCO	-	Volunteer Efforts for Development Concerns
VIF	-	Variance Inflation Factor
VSL	-	Village Savings and Loan
WFP	-	World Food Program

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ABSTRACT

This study investigated the link between social capital and access to productive resources particularly land, labor, information, and credit, as well as the impact of agricultural technical assistance on resource access among formerly-displaced farm households in Lira, northern Uganda. The study also explored whether established associations between social capital and food security are also observed in post-conflict situations. Food security was measured using the validated Household Food Insecurity Access Scale (HFIAS). Data were collected from March-July 2011 through interviews with 221 heads of household. The study identified socio-demographic and socio-economic factors that influence and differentiate households in terms of access to resources necessary for achieving food security in Lira district.

Combining quantitative and qualitative approaches, this study found a strong link between social capital, resource access, and food security outcomes among households in Lira. Social capital in terms of social networks emerged as the main predictor for accessing land, labor, information, and credit. Multivariate logistic regression analysis found a strong positive association between food security and social capital. Socio-demographic factors, particularly gender and educational level of household head, as well as ownership of livestock, and home possessions (which are regarded as indicators of wealth in the area), were also positively associated with access to resources necessary for achieving food security. The study has important policy implications for development intervention programs in post-conflict settings that transition from emergency-based to long-term agricultural development assistance. Results can aid the design of effective food security programs that recognize and support peoples' initiatives and strengthen their social networks while targeting the most vulnerable groups to promote sustainable livelihoods in post-conflict communities.

Key words: social capital, agricultural technical assistance, credit, food security, post-conflict, Uganda

CHAPTER 1. GENERAL INTRODUCTION

Background and purpose

Food insecurity and hunger remain central concerns in many developing countries, particularly in rural areas. Despite substantial reductions in poverty and food insecurity during recent decades, 12.5% of the world's population remains food insecure; and 26% of the world's children are stunted (UNDP 2013). Even with its abundant agricultural resources, sub-Saharan Africa (SSA) maintains the highest incidence of food insecurity and malnutrition (Mwaniki 2006; UNDP 2013). Numerous factors, including poverty and low agricultural yields resulting from limited access to productive resources (land, credit, labor, and information) cause food insecurity in the region. Political instability manifested in widespread violent conflict in sub-Saharan Africa also exacerbates poverty and food insecurity among rural communities (UNDP 2013). Other threats to food security in the region include population growth and climate change.

Throughout the world, war forces people to relinquish their homes and livelihoods. Violent conflict persists as the dominant cause of massive displacement. The number of forcibly displaced people worldwide was 45.2 million in 2012, the highest in two decades (UNHCR 2013; IDMC 3013). There were 15.4 million refugees, men, women, and children fleeing their country of origin and crossing an international border to find safety in another country. An additional 28.8 million internally displaced persons (IDPs) were seeking safety within their country of origin; of these IDPs, 80% were in developing countries. In sub-Saharan Africa, political instability and persisting poverty cast doubt on the region's ability to achieve the first Millennium Development Goal (MDG) of reducing the number of people living in extreme poverty and hunger in half (UNDP 2013).

Despite these challenges, Uganda is among the countries with the "best poverty reduction performances since 1992" (World Bank 2012:1). Between 1993 and 2010, poverty declined from 60.2% to 29.1% in rural areas and 28.8% to 9.1% in urban areas. Despite significant progress, however, poverty remains a serious problem in Uganda, particularly in rural areas (Smith, Alderman and Aduayom 2006; Ssewanyana and Kasirye 2010). Like other sub-Saharan countries, the majority (87%) of the population in Uganda lives in rural areas and 73% rely on agriculture for food and income (UNDP 2013). Agriculture constitutes 40% of the GDP, 70-80% of export earnings (UNDP 2007), and 80% of employment (Birungi and Hassan 2011). In Uganda, the reduction of poverty has not been uniform across regions. Recovering from civil war, northern Uganda has the highest incidence of poverty and food insecurity in the nation (World Bank 2012; WFP 2013).

Protracted war between the Lord's Resistance Army (LRA) and the Government of Uganda (GoU) destroyed resources and eroded safety nets. During the war, 1.8 million people were forcibly displaced to camps (Oxfam 2008; IDMC 2010). However, following the peace agreement signed in 2006, a majority of the displaced households either returned to their areas of origin or resettled in new locations (IDMC 2010). With large numbers returning to areas devastated by violent conflict, returning households face serious challenges. Inadequate resources and limited access to basic services such as health care are serious problems (Oxfam 2008). Humanitarian organizations and government agencies initiated a variety of interventions to improve conditions, directing much of the development assistance towards the revitalization of agriculture. A key assumption underlying many of these efforts is that effectiveness of development intervention programs depends on access to key resources that can be put to productive use, including land, labor, credit, and information.

Research on rural development specific to conflict-affected communities tends to focus more on needs perceived by outsiders and less on how poor people use their experience and social networks to manage complex livelihoods and solve priority problems. An implicit assumption regarding homogeneity of the poor misses the crucial roles that social factors such as age, gender, and education play in accessing essential resources. Due to cultural norms and societal institutions, female-headed households are generally economically disadvantaged and lack control of productive assets.

The purpose of this study is to understand how post-conflict households in Lira, northern Uganda utilize their own assets with external support to increase access to resources for agricultural production (land, credit, labor, and information) and improve food security. The contribution of socio-demographic and socioeconomic factors to resource access and food security is also examined. Gaining a full understanding of local resources and factors shaping access to resources may aid in the design of effective rural development program within post-conflict settings.

Overview of food security, sustainable livelihoods, and social capital

Food security

In the 1970s, conceptualization of food security focused on the overall availability of food supply at the regional and national levels. However, realization that large population segments remained food insecure despite significant increases in aggregate food supply prompted a paradigm shift to consider access to food at the household and individual levels (Maxwell and Smith 1992; FAO 1996). Subsequently, conceptualization of food security evolved, along with its definition, to address its multiple dimensions in various socio-cultural

settings. The Food and Agriculture Organization of the United Nations (1996:3-4) defines food security as a condition "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active healthy life." Food insecurity refers to "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire foods in socially acceptable ways" (Bickel et al. 2000:6).

For households and individuals, being food secure equates with the availability in sufficient supply, accessibility, and properly utilization of food. Availability of food is achieved through domestic production, commercial food imports, or food aid. Food accessibility is achieved through access to necessary resources, purchasing power (Kennedy and Haddad 1992), and social support (Tsai et al. 2011; FAO 2013). Sufficient availability is an essential element of food security but does not guarantee adequate access for households. Income and social support determine household access to food (FAO 2013). While shocks and stresses, such as conflicts and drought, may interrupt food supplies, lack of resource to purchase food is regarded as the main barrier to achieving food security (Mwanik 2006; Flora 2008). Given resource limitations, poor households depend on social relations for leveraging resources necessary for accessing food. Understanding how people use their networks to access resources is essential for devising effective intervention programs. To gain an in-depth understanding of household strategies and social dynamics, a more comprehensive framework is required in order to adequately analyze information. The sustainable livelihoods approach is of particular relevance for this study because of its focus on local resources, and people's strengths and priorities.

Sustainable Livelihoods

Studies of poverty and food security in Uganda tend to focus on natural, financial, physical, and human capital endowments (Appleton et al. 1999; Ellis and Bahiigwa 2003; Ssewanyana and Kasirye 2010). They pay less attention to the role of social capital and people's initiatives to improve conditions by increasing access to productive. In war affected communities, the most important and productive resources are those embedded within people; this includes human and social capital (Mazur 2004). Effective intervention programs depend on enhancing these resources in a manner that promotes sustainable livelihoods.

Since first articulated by Chambers and Conway in 1992, the concept of sustainable livelihoods has undergone modifications by different scholars and development practitioners. According to Scoones (1998:5):

> A livelihood comprises assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base.

An alternative definition highlighting issues associated with elements of vulnerability (ownership, access, constrains, and decision making) is offered by Singh et al. (1994: 3) which defines sustainable livelihoods as:

> People's capacities to generate and maintain their means of living, enhance their well-being and that of future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, socio-cultural, economic and political and are predicated on equity, ownership of resources and participatory decision making.

Understanding people's strengths and initiatives to help themselves is central to the livelihoods approach (Butler and Mazur 2007). This approach is particularly crucial in post-conflict situations. Livelihood resources include human capital (knowledge, good health and capacity to perform labor, education, leadership, and information), social capital (networks and organization), physical capital (farm implements and livestock), natural capital (land, water, perennial plants), and financial capital (cash, savings, remittances, and credit). In conflict situations, liquid assets such as livestock and jewelry represent financial capital (Stites, Mazurana, and Carlson 2006; Morais and Ahmad 2010). Despite its strength, the sustainable livelihoods approach has weaknesses. Murray (2001) argues that the approach does not address elements of vulnerability, including conflict and inequalities in power. Flora and Flora (2004) suggest that this weakness can be addressed by the Community Capitals Framework (CCF), which incorporates political capital (the ability to affect rules and policies that determine access to resources) and cultural capital (values and customs that shape people's worldviews), in addition to the five capitals in the original sustainable livelihoods approach.

Social capital

Social capital has gained wide attention among scholars and development practitioners in recent decades. Bourdieu (1986:248-249) defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." Bourdieu conceives of social capital at the individual level, as emphasizing benefits that individuals derive from membership in a group as the motivation to engage in social networks. He argues that the volume of social capital that individuals possess is contingent upon the size of the network and the volume of capital (economic, cultural or symbolic) accruing to individuals as a result of

engagement in the network. Other scholars, however, conceive of social capital at the community level. For example, Putnam (1993:35-36) refers to social capital as "features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit." Flora and Flora (2008:117) describe the concept as an "attribute of communities, which is more than the summing up of individual social capital." Therefore, social capital can be described as an emergent quality of group or community interactions. Coleman (1988:98) states that "like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence."

Realization of the potential of social capital in rural development has increased interest among scholars and development specialists. It led to recent increased use of the group-based approach for implementing agricultural technical assistance in developing countries (Uphoff 2000; Narayan 2002). Scholars debate how to measure social capital. However, a considerable body of work has used or advocates for the use of social network as a proxy for measuring social capital (Burt 1997; Portes 1998; Krishna and Lin 1999; Uphoff 1999; Narayan and Prichett 1999; Flap 2004). Knoke and Yang (2008:8) define social networks as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations." Central to social network analysis are relations and actors. Relations refer to the specific type of ties between actors. Actors can be individuals or groups. Social network analysis seeks to understand bonds among actors and their implications for resource exchange and livelihoods (Wassermen 2005). Given the complexity of the concept, measurement of social capital can be tailored to the unit of analysis used (Grootaert and Bastelaer 2001).

In this study, with the household as the unit of analysis, we conceptualize social capital as the household's ability to access needed resources through its social networks. A household is

defined as a group of persons who normally live and eat their meals together, share and make joint decisions regarding resource allocation, and have one man or woman as head whose authority is acknowledged by household members (Beaman and Dillon 2009). In Africa, men are traditionally considered the head of household. This has important implications for intra-households dynamics in terms of resource control and utilization.

Two types of social capital are examined. Bonding social capital refers to connections that exist within groups of people having similar background or interests, including gender, ethnicity, kinship, and education (Flora and Flora 2004). Bonding social capital is often a crucial source of social support. However, it also may effectively exclude other people based on their social position in the community, such as economically disadvantaged or women-headed households (Berry 1989; Narayan 2002) from benefiting from network. Bridging social capital refers to the connections that groups/communities have with outside groups and communities. Bridging social capital described networks among people from different socioeconomic and other social characteristics, such as ethnic background. For effective development, the balance of both bonding and bridging social capital is necessary. It is especially important for people in post-conflict communities to reinforce norms of trust and inclusiveness within their communities while expanding their networks to leverage resources from other communities or organizations (Flora and Flora 2008).

Background of the study area

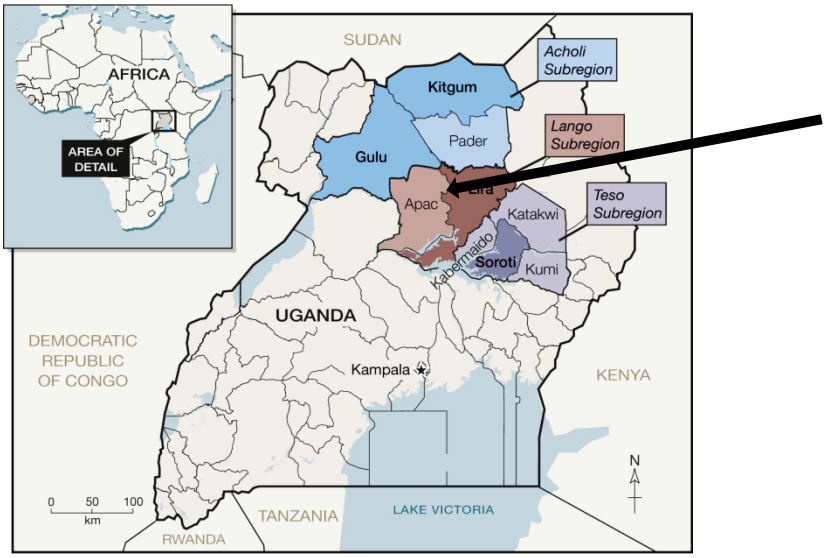
Lira is one of the five northern districts of Uganda and its capital Lira town is 352 km from the national capital Kampala. It is bordered by the districts of Pader and Otuke in the north and northeast, Alebtong in the east, Dokolo in the south and Apac in the west (Figure 1). The district lies at 975m to 1,146m above sea level. Its coordinates are: 02 20N, 33 06E (Latitude:

02.3333; Longitude: 33.1000). It is characterized by a continental climate, with two peak rainy seasons, April-May and August-October. The average annual rainfall is 1000-1500mm. According to the National Census (2002), the district has a population of 757,763 (50.7% female). As of 2005, three counties (Otuke, Erute, Moroto) comprise the district with 18 sub-counties, 123 parishes and 1,546 villages (Uganda District Information Handbook 2005). The soil is mainly sandy loam, which covers most of the district. Agriculture is the main economic activity, with the majority (86%) living in rural areas and dependent on subsistence farming for their livelihoods (UNDP 2007). Millet and sorghum, maize, sweet potatoes, cassava, peas, beans, sesame, groundnuts, and various vegetables are grown in the area. Cattle herding had been an important livelihood activity and indicator of wealth before the war, but cattle rustling in the late 1980s and the rebel insurgency drastically reduced the livestock population in the district (Oxfam 2008). Other livestock reared in the district include chickens, pigs, and goats.

This study was conducted with former internally-displaced households that were participating in a three-year food security project implemented by an indigenous non-governmental development organization (Volunteer Efforts for Development Concerns – VEDCO) in two parishes of Apalla sub-county (Okwongole and Obin), two parishes of Aromo sub-county (Arwot-omito and Apuce), three parishes of Ogur sub-county (Akano, Adwoa and Akangi), and three parishes of Amach sub-county (Adyaka, Ayach and Banya). The last three parishes of Amach sub-county were incorporated in the project at the end of 2010. The overall goal of the project was to enhance the capacity of small-scale farmers to increase food production and utilization, improve sanitation, and develop agricultural marketing skills among 7,000 small-scale farmers in 4,200 households. This was accomplished through provision of agricultural extension services and training in various components, including agronomic

practices, natural resource management, post-harvest crop handling techniques, business skills, nutrition, preparation and consumption of a balanced diet, and development of farmer organizations.

Figure 1.1. Map of Uganda showing the location of Lira District



Food and Agricultural Organization of the United Nation
http://www.fao.org/docrep/005/ac912e/ac912e03.htm

Research objective and questions, hypotheses, and conceptual model

Objective

The specific objectives of this research are to understand: (1) how social capital and agricultural technical assistance increase access to productive resources (land, credit, labor, and information); (2) the impact of social capital and agricultural technical assistance on food security; and (3) the contributions of socio-demographic and socioeconomic factors to resource access and food security among formerly displaced farm households in Lira. Gaining an understanding of local resources and factors shaping access to resource may aid the design of

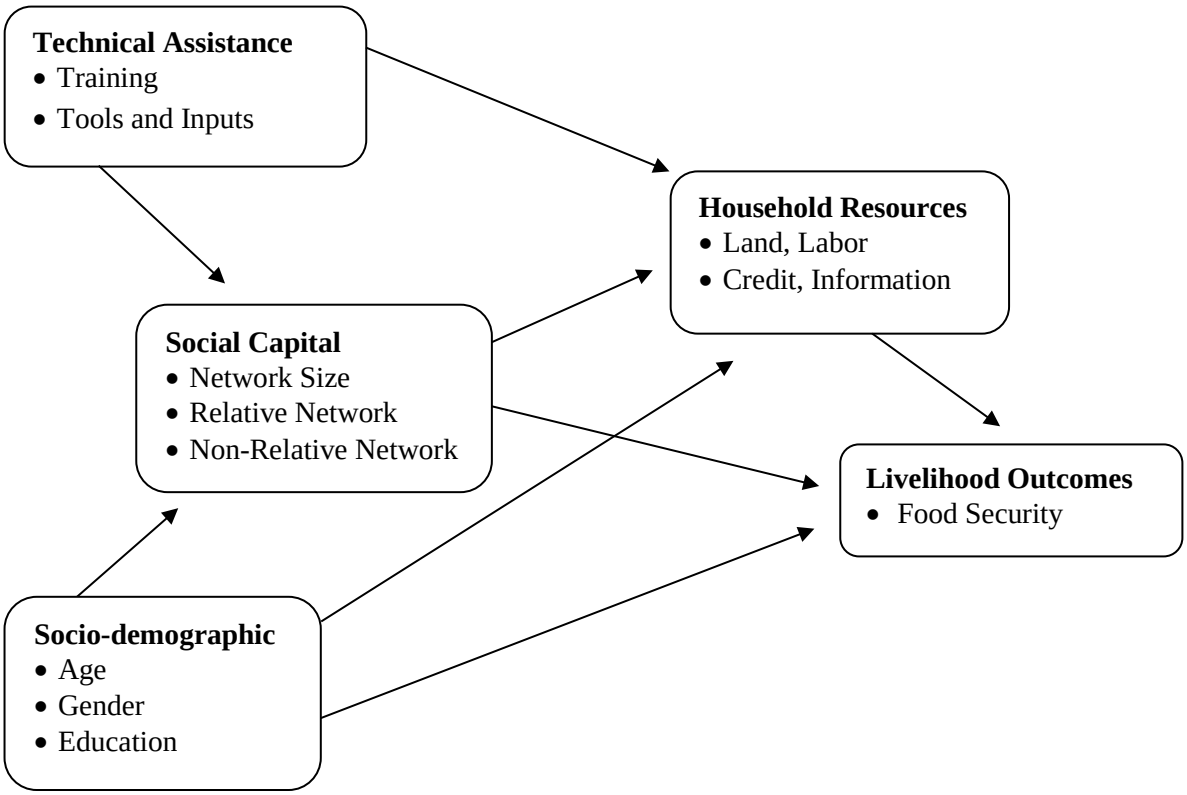
effective food security and rural development programs within post-conflict settings. These relationships are viewed in the context of rural development project support. This research addressed the following questions:

1. What are the relationships among social capital (bonding and bridging), agricultural technical assistance, and access to productive resources (land, labor, and information) in post-conflict Lira district?
2. How do social capital and agricultural technical assistance affect households' food security?
3. To what extent do socio-demographic characteristics (age, sex, and education) affect agricultural technical assistance, social capital, and access to productive resources?
4. What are the contributions of socio-demographic characteristics and socioeconomic factors (land and livestock ownership) to food security?

Hypotheses

1. Social capital is expected to be higher among households that have received more technical assistance and have favorable socio-demographic characteristics.
2. Productive resources are expected to be greater among households that have more social capital, technical assistance and favorable socio-demographic characteristics.
3. Food security is expected to be better among households that have more productive resources, social capital, technical assistance and favorable socio-demographic characteristics.

Figure 1. 2. Relationships among technical assistance, social capital, resources, and food security in Lira, northern Uganda



Population and sampling

A multi-stage sampling strategy was used in this study. To gain broader insights into household activities and project impacts, we included in the study all four sub-counties and parishes in each sub-county where the project operated. VEDCO's project activities were organized with parishes as the administrative units; therefore, parishes were used in this study for selecting the samples. To begin the sampling selection, lists of participating households were updated using group training attendance lists. With the help of project extension staff and the community based trainers (CBTs), names of household heads who were no longer participating in the project were excluded from the sampling frame. Systematic random sampling was used to

select 180 male-headed households out of 3710 participating male-headed households. Proportional sampling was utilized to draw samples from farmer groups in the parishes. Using similar methods, 60 female-headed households were randomly selected out of 341 participating female-headed households representing all parishes except for three (Adyaka, Ayach, and Banya) of Amach Sub-county. These parishes were excluded because they were incorporated late in the project with no special consideration for female-headed households as in the other parishes. We discovered during the interviews that seven of the 180 male-headed households sampled were female-headed and were included in the sample. Female-headed households comprise 24% of the returning households and were included in the study to assess the influence the sex of household heads on resource access and food security outcomes. Out of the 240 households sampled, interviews were completed with 92% (221 total, 154 male-headed and 67 female-headed); 19 (16 males and one female) were not available for interviews. Two respondents (male) were dropped due to incomplete information.

Data collection

This study used quantitative and qualitative methods. A structured questionnaire was utilized to collect quantitative information on (a) types and sources of information, (b) relations involving access to land, labor, credit, and information, and (c) types of training received (agricultural technical assistance). Food security information was collected using a validated Household Food Security Scale (HFIAS). Information was also collected on selected assets as well as demographic and socioeconomic characteristics (age, sex, and educational level of household heads) to examine social factors that may shape resource access. Qualitative information was collected through direct observations and informal discussions with farmers as well as attending group saving meetings.

Data Analysis

Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) software version 21. Descriptive statistics (frequencies, mean, and median) were used to characterize respondents. Bivariate analysis (chi-square) was used to determine if any relationships existed between independent and dependent variables of interest. Logistic regression was selected in this study after log transformation failed to correct the skewedness of the data leading to grouping of the independent and dependent variables into categories. This form of multivariate regression is chosen when the dependent variable is categorical and the multiple independent variables are continuous or categorical. Unlike linear regression that predicts the value of an outcome (Y) from a predictor variable (X_1) or set of predictors (X_n), logistic regression predicts the probability of an outcome (Y) occurring given known values of a predictor. A p value <0.05 was used to identify statistical significance, as well as a less conservative p value $<.10$ due to small sample size (Menard 1995).

Organization of dissertation

This dissertation is organized as follows: Five chapters comprise the dissertation. Chapter one is this introduction which establishes a foundation for understanding the significance of the problem under investigation. It provides an overview of the theoretical perspective and research questions. Chapters two through four present a series of three focused analyses. Chapter two presents analysis of social capital and agricultural technical assistance received in relation to land, labor, and information. Chapter three examines the relationships between food security and social capital, also taking into account socio-demographic and socioeconomic factors. Chapter four investigates the role of social capital in access to credit. Each of the three chapters represents an article prepared to be submitted to a different journal for publication; some

repetition exists regarding the theoretical perspectives and methods. The final chapter summarizes the findings and provides the overall conclusions. It also offers recommendations for policy and future research.

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CHAPTER TWO. AGRICULTURAL TECHNICAL ASSISTANCE, SOCIAL CAPITAL, AND ACCESS TO PRODUCTIVE RESOURCES IN POST-CONFLICT LIRA, NORTHERN UGANDA

Manuscript for submission to *The Journal of Agricultural Education and Extension*

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Abstract

Implementing agricultural technical assistance in post-conflict communities requires understanding local resources and social dynamics that shape resource access. This study examines how formerly displaced farm households in Lira, northern Uganda, use and combine agricultural technical assistance with their own resources to address challenges associated with access to productive resources. Specifically, the study examines how agricultural technical assistance increases access to resources, the role of social capital in resource access, and how household socio-demographic characteristics affect resource access. Data were collected from March - July 2011 through interviews with 221 heads of household receiving agricultural assistance. Using quantitative and qualitative approaches, the study identifies key household resources and factors affecting resource access. Results of this study indicate significant associations between social capital and assets that a household controls, as well as between household socio-demographic characteristics and access to resources. The study has important policy implications for agricultural technical assistance and development programs in post-conflict settings that transition from emergency-based to long-term agricultural development assistance.

Keywords: agricultural technical assistance, social capital, social network, resource, Uganda.

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Introduction

Reducing poverty remains a major challenge in developing countries. Although poverty is global phenomena, sub-Saharan Africa has a disproportionate share of people surviving on less than US $1 a day, with the majority of the poor living in rural areas and relying on agriculture as the major source of food and income (Dixon et al. 2001; UNDP 2007). Compared to other developing regions, food production per capita has significantly declined in sub-Saharan Africa (SSA) since 1970 (Dixon et al. 2001; Diao et al. 2007). Subsequently, the region faces a continued decline in food security and a high incidence of malnutrition with detrimental consequences to human health. Numerous factors, including inadequate access to resources (land, financial capital, labor, information) that can be put to productive use, continue to constrain small-scale farmers from increasing agricultural productivity and achieving viable livelihoods (IFAD 2001; Rahman and Westley 2001; National Academy of Science 2010).

Uganda has made remarkable progress towards reducing poverty. According to the World Bank (2012:1), Uganda is among the countries with the "best poverty reduction performances since 1992" with poverty declining from 60.2% to 29.1% in rural areas and 28.8% to 9.1% in urban areas between 1993 and 2010. Despite significant progress, however, poverty remain serious problems in Uganda, particularly in rural areas (Smith, Alderman and Aduayom 2006; Ssewanyana and Kasirye 2010). Like other sub-Saharan countries, the majority (87%) of the population in Uganda lives in rural areas and 73% rely on agriculture for food and income (UNDP 2007). Agriculture constitutes 40% of the GDP, 70-80% of export earnings (UNDP 2007), and 80% of employment (Birungi and Hassan 2011). In this respect, agriculture is the backbone of the country's economy and a cornerstone for poor rural households to construct viable livelihoods. In Uganda, the reduction of poverty has not been uniform across regions.

Engulfed by brutal civil war from 1986-2006, northern Uganda continues to lag behind with poverty levels nearly double the national average (World Bank 2012).

Two decades of violent conflict between the Lord's Resistance Army (LRA) and the Government of Uganda (GoU) has resulted in enormous loss of human life, destroyed resources, and eroded safety nets. During the war, 1.8 million people were forcefully displaced to camps and other areas (Oxfam 2008; IDMC 2010). However, following the peace agreement signed in 2006, a majority of the displaced households have either returned to their areas of origin or resettled in new locations (IDMC 2010). With large numbers returning to areas devastated by conflict, without assets on hand, households face serious challenges. Inadequate resources and limited access to basic services such as health care are serious problems (Oxfam 2008). In response to this situation, humanitarian and government agencies have initiated a number of interventions to help households reconstruct livelihoods and improve conditions. As in other regions, most of the population in northern Uganda (86%) lives in rural areas, with subsistence farming being the dominant source of livelihoods (UNDP 2007). Given the crucial role of agriculture in the region, much of the development assistance has been directed towards revitalization of agriculture. The success of external assistance in improving the situation, however, hinges on equitable and adequate access to key resources, particularly, land, labor, financial capital, and information.

Access to key resources is widely recognized as the main constraint for small-scale farmers in developing countries and Uganda is no exception. Access to productive resources is more problematic in northern Uganda where civil war has destroyed assets (Stites, Mazurana, and Carlson 2006). Regarding access to land, the single most important resource in the area, returning households have resettled in their original villages and have access to some or all of

their original land; those who have small amounts of land or have sufficient capital have rented additional land from peers to increase production. With mortality high among adult males engaged in or targeted during war, a dramatic demographic shift toward female-headed households has become common in war-affected communities (Zuckerman and Green 2004; Edward 2007). For example, 24% of the returning IDPs in northern Uganda live in female-headed households (IDMC 2010). Given the entrenched cultural bias against women, particularly in land tenure systems, female-headed households have limited access to resources. In this context, effective external support requires a good understanding of the social dynamics which shape access to and control over productive resources, rather than assuming homogeneity among the poor, which could unintentionally reinforce inequalities (Longley et al. 2007).

Research on rural development tends to focus more on needs perceived by outsiders and less on how poor people, particularly in conflict-affected communities, use their experiences to strategically combine external support and their own assets to manage complex livelihoods, accumulate assets to mitigate risks, and plan for a brighter future. The implicit assumption of homogeneity among the poor overlooks important social factors (e.g., age, sex, and education) that differentiate people in terms of access to resources (internal and external). Due to cultural norms and societal institutions, female-headed households are generally economically disadvantaged and thus have limited access to key resources. Since one-third of the returned households in Lira are female-headed, the influence of gender is examined in this study by comparing male and female-headed households in terms of access to resources.

The purpose of this study is to understand three interrelated phenomena: (1) how farmers combine external support (agricultural technical assistance) with local assets to increase access to productive resources (land, labor, and information); (2) how participation in groups receiving

agricultural technical assistance and social capital (bonding and bridging) affects access to productive resources in post-conflict communities; and (3) the contribution of socio-demographic factors (age, sex, and education) on resource access. Agricultural technical assistance refers to a set of extension services, including training in land preparation techniques, such as tillage and appropriate time to plough land, proper spacing of crops, chemical fertilizers and herbicides/pesticides usage, manure application, post-harvest crop handling and storage, and marketing skills training.

The study was carried out in the context of a three-year food security intervention project implemented by an indigenous non-government organization (NGO) Volunteer Efforts for Development Concerns (VEDCO) in partnership with Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance (ACDI/VOCA) in Lira district. In this paper, we address the following questions: What are the relationships among agricultural technical assistance, access to productive resources (land, labor, and information), and social capital in Lira district? How does social capital affect access to productive resources? To what extent do household socio-demographic characteristics (age, sex, and education) affect agricultural technical assistance, social capital, and access to productive resources?

To gain a better understanding of these dynamics, a more comprehensive framework is required to collect and analyze this information. Because of its focus on people's strengths and a more holistic approach to development, the sustainable livelihoods approach is of particular relevance for this study. This approach recognizes that people's livelihood strategies are contingent upon the types of assets they control or to which they have access, the factors (economic and social) that shape access, and contextual issues at the local, national, and global levels. By using the sustainable livelihoods approach as the analytical framework, this study will

contribute to understanding factors that constrain or enhance household capacity to construct viable livelihoods. As a result, the findings can be helpful in designing agricultural assistance programs that more effectively provide agricultural technical assistance that is appropriate for local contexts and enhances equitable access to resources.

Conceptual framework

Post-conflict development involves a shift from emergency-based assistance to long term development strategies (Stites, Mazurana, and Carlson 2006; Longley et al. 2007). The former approach has been criticized for ignoring people's resourcefulness while creating dependency on humanitarian assistance. Studies on poverty in Uganda tend to focus on natural, financial, physical, and human capital endowment (Appleton et al. 1999; Ellis and Bahiigwa 2003; Ssewanyana and Kasirye 2010) and pay less attention to the role of social capital and people's initiatives in increasing access to productive resources to improve conditions. In post-conflict situations where assets are destroyed or lost, the most important resources that can be put to productive use are those embedded within people, including human and social capital (Mazur 2004). These important resources can be enhanced and combined with other assets in a manner that promotes sustainable livelihoods.

Since first articulated by Chambers and Conway in 1992, the concept of sustainable livelihoods has undergone modifications by different scholars and development practitioners. According to Scoones (1998:5):

> A livelihood comprises assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with

> and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base.

An alternative definition highlighting issues associated with elements of vulnerability (ownership, access, constrains, and decision making) is offered by Singh et al. (1994: 3) which defines sustainable livelihoods as:

> People's capacities to generate and maintain their means of living, enhance their well-being and that of future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, socio-cultural, economic and political and are predicated on equity, ownership of resources and participatory decision making.

Knowing and recognizing people's resourcefulness, constraints, and initiative to overcome constraints is central to the livelihoods approach (Butler and Mazur 2007), and can be the starting point for effective development assistance. In distressed circumstances, such as in conflict/post-conflict situations, understanding of this dynamic can be helpful for making connections among various intervening factors that may constrain or enhance livelihoods so that effective interventions can be devised (De Satage and Holloway 2002). Livelihoods approaches recognize that poor people pursue dynamic livelihood strategies within a range of social, economic, political, and environmental constraints.

Core livelihood resources consist of human capital (knowledge and skills, good health and capacity to perform labor, education, leadership, and information), social capital (networks, organization, and membership), physical capital (roads, farm implements/tools, and livestock), natural capital (land and water, perennial plants, and firewood), and financial capital (money, savings, remittances, and credit). In some instances, such as in conflict situations, liquid assets such as livestock and jewelry are considered financial capital (Stites, Mazurana, and Carlson

2006; Morais and Ahmad 2010). Like other concepts, the sustainable livelihoods approach has weaknesses. Murray (2001) points out that the approach underplays elements of vulnerability including macro-economic trends, conflict, inequalities in power within and between communities and other powerful entities such as government officials. Flora and Flora (2004) suggest that this weakness can be addressed by the Community Capitals Framework (CCF), which incorporates political capital (the ability to affect rules and policies that determine access to resources) and cultural capital (values and customs that shape people's worldviews), in addition to the five capitals in the original sustainable livelihoods approach. According to Flora (2007:2), "consideration of the seven capitals is critical in making sure that programs are both sustainable and effective." Characterized by lack of sufficient assets, poorer households heavily rely on their social networks involving kin, friends, and neighbors for resource access and survival. In this respect, social capital is central to the livelihoods of the poor.

Social capital and its link to resources access

Social capital has gained wide attention among scholars and development practitioners in recent decades. Bourdieu (1986:248-249) defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." Bourdieu conceives of social capital at the individual level, as emphasizing benefits that individuals derive from membership in a group as the motivation to engage in social networks. He argues that the volume of social capital that individuals possess is contingent upon the size of the network and the volume of capital (economic, cultural or symbolic) accruing to individuals as a result of engagement in the network. Other scholars, however, conceive of social capital at the community level. For example, Putnam (1993:35-36) refers to social capital as "features of social

organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit." Flora and Flora (2008:117) describe the concept as an "attribute of communities, which is more than the summing up of individual social capital." Therefore, social capital can be described as an emergent quality of group or community interactions. Coleman (1988:98) states that "like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence." Poor people can form groups such as farmer groups or larger associations to develop social capital or reinforce norms that facilitate cooperation and collective action in order to achieve goals (Flora and Flora 2008).

Uphoff (2000) categorizes social capital into structural and cognitive components. Structural social capital characterizes organizations and networks and facilitates information flow and enables collective action. Cognitive social capital is associated with shared norms and trust and engenders cooperative behavior necessary for the maintenance and production of social capital. Regardless of different conceptualizations and levels of analyses, all scholars view social capital as a resource embedded in social relations and interactions that facilitates collective action towards mutually beneficial goals. In poor rural communities that lack sufficient resources, membership and participation in social networks are crucial for accessing resources and survival. Building or facilitating social capital among small-scale farmers can enable greater cooperation and networking within and between groups as well as with the larger community to overcome constraints associated with limited access to productive resources (Putnam 1993).

Recognition of social capital as a powerful tool for small-scale farmers to improve conditions has increased interest among scholars and development specialists. Building and enhancing social capital by organizing and supporting farmer groups has been increasingly used for implementing agricultural technical assistance in rural areas of developing countries (Uphoff

2000; Narayan 2002). Despite the popularity of the concept, measuring social capital is a subject of debate, however; a considerable body of work utilizes social network as a proxy to analyze and measure social capital. Knoke and Yang (2008:8) define social networks as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations." Central to social network analysis is relations and actors, with relation describing a specific kind of ties between actors (Knoke and Young 2008). Actors can be individuals or groups (formal and informal) and social network analysis seeks to understand bonds among actors and their implication in terms of resource exchanges (Wassermen 2005). A social network is categorized into network size and network composition. Network size comprises total number of connections while network composition is refers to different types of connections, such as the connections with friends, relatives or organizations.

Lin (1999) states that social capital has its roots in social networks, and should therefore be measured in relation to its roots. Other scholars use or advocate for the use of membership in networks as a proxy for measuring social capital (Burt 1997; Portes 1998; Krishna and Uphoff 1999; Narayan and Prichett 1999; Flap 2004). Given that social capital can be conceptualized at different levels, its measurement can be tailored to the unit of analysis used (Grootaert and Bastelaer 2001). In this study, the household is used as the unit of analysis. We therefore conceptualize social capital at the household level, and drawing from the literature, we define social capital as a social network that has the potential to provide opportunities for leveraging resources. Two types of social capital can be distinguished. Bridging social capital describes connections within diverse groups/communities and connections with outside groups and communities (Flora and Flora 2008). Bonding social capital refers to connections that exist within groups of similar backgrounds or interests including gender, ethnicity, kinship, and

education (Flora and Flora 2004). In communities where customary land tenure arrangements prevail, bonding social capital (e.g., kinship) is important for land access, but has the tendency to exclude certain groups, such as women-headed households (Berry 1989; Narayan 2002). Bridging social capital encourages networks among people from different socioeconomic and other social characteristics, such as ethnic background. The balance of both bridging and bonding social capital is important for effective community development, particularly in post-conflict situation where people can reinforce norms of trust and inclusive networks within their communities while expanding their networks to leverage resources from other communities or organizations (Flora and Flora 2008). Key dimensions of social networks are size and composition. Network size refers to the total number of connections, while network composition refers to different types of connections, such as those with relatives, friends or organizations. In this study, relatives network and non-relatives network represent bonding social capital and bridging social capital, respectively.

In Uganda, various social organizations (formal and informal) include community-based organizations, self-help and village associations, churches, and non-governmental organizations (NGOs) exist (Ellis and Bahiigwa 2003). Groups may have multiple objectives, including consolidation of efforts and pooling assets to increase access to resources necessary for improving livelihoods.

Although social capital is central to the livelihoods of the poor, the capacity of households to secure benefits arising from participation in social networks may vary. Social factors (e.g., age, sex, and education) mediate participation in groups resulting in limited access to crucial resources and different livelihood outcomes. We hypothesize in this study that: (1) households which receive higher levels of agricultural technical assistance have more land,

livestock, farm equipment, and home possessions than other households; (2) households with high levels of social capital access more resources (land, labor, and information) and have more assets than households with low levels of social capital; and (3) households in which the head is younger, male, and more educated receive more agricultural technical assistance and possess higher levels of social capital, and more resources/assets than households whose head is older, female, and less educated.

Study area and methods

Study area

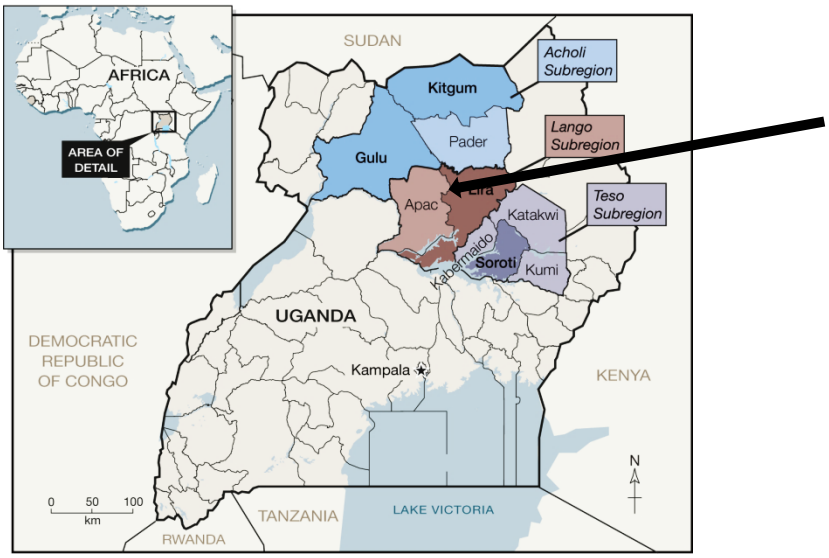
As stated earlier, the objective of this research is to investigate impacts of external support and factors affecting access to resources in a post-conflict setting. Recovering from a civil war and with many formerly displaced households returning home from camps and receiving agricultural technical assistance, Lira district is very appropriate for this study.

Lira is one of the five northern districts of Uganda and its capital Lira town is 352 km from the national capital Kampala. It is bordered by the districts of Pader and Otuke in the north and northeast, Alebtong in the east, Dokolo in the south and Apac in the west (Figure 1). The district lies at 975m to 1,146m above sea level. Its coordinates are: 02 20N, 33 06E (Latitude: 02.3333; Longitude: 33.1000). It is characterized by a continental climate, with two peak rainy seasons, April-May and August-October. The average annual rainfall is 1000-1500 mm. According to the National Census (2002), the district has a population of 757,763 (50.7% female). As of 2005, three counties (Otuke, Erute, Moroto) comprise the district and there are 18 sub-counties, 123 parishes and 1,546 villages (Uganda District Information Handbook 2005). The soil is mainly sandy loam, which covers most of the district. Agriculture is the main

economic activity, with the majority (86%) living in rural areas and dependent on subsistence farming for their livelihoods (UNDP 2007). Millet and sorghum, maize, sweet potatoes, cassava, peas, beans, sesame, groundnuts, and various vegetables are grown in the area. Cattle herding had been an important livelihood activity and indicator of wealth before the war, but cattle rustling in the late 1980s and the rebel insurgency drastically reduced the livestock population in the district (Oxfam 2008). Other livestock reared in the district include chickens, pigs, and goats.

This study was conducted with former internally-displaced households that were participating in a three-year food security project implemented by VEDCO in two parishes of Apalla sub-county (Okwongole and Obin), two parishes of Aromo sub-county (Arwot-omito and Apuce), three parishes of Ogur sub-county (Akano, Adwoa and Akangi), and three parishes of Amach sub-county (Adyaka, Ayach and Banya). The last three parishes of Amach sub-county were incorporated in the project at the end of 2010. The overall goal of the project was to enhance the capacity of small-scale farmers to increase food production and utilization, improve sanitation, and develop agricultural marketing skills among 7,000 small-scale farmers in 4,200 households. This was accomplished through provision of agricultural extension services and training in various components, including agronomic practices, natural resource management, post-harvest crop handling techniques, business skills, nutrition, preparation and consumption of a balanced diet, and development of farmer organizations.

Figure 2.1. Map of Uganda showing the location of Lira District



Food and Agricultural Organization of the United Nation
http://www.fao.org/docrep/005/ac912e/ac912e03.htm

Population and sampling

A multi-stage sampling strategy was used in this study. To gain broader insights into household activities and project impacts, we included in the study all four sub-counties and parishes in each sub-county where the project operated. VEDCO's project activities were organized with parishes as the administrative units; therefore, parishes were used in this study for selecting the samples. To begin the sampling selection, lists of participating households were updated using group training attendance lists. With the help of project extension staff and the community based trainers (CBTs), names of household heads who were no longer participating in the project were excluded from the sampling frame. Systematic random sampling was used to select 180 male-headed households out of 3710 participating male-headed households. Proportional sampling was utilized to draw samples from farmer groups in the parishes. Using similar methods, 60 female-headed households were randomly selected out of 341 participating female-headed households representing all parishes except for three (Adyaka, Ayach, and

Banya) of Amach Sub-county. These parishes were excluded because they were incorporated late in the project with no special consideration for female-headed households as in the other parishes. We found out during the interview that seven of the 180 male-headed households sampled were female-headed and were included in the sample. Female-headed households comprise 24% of the returning households and were included in the study to assess the influence the sex of household heads on resource access and food security outcomes. Out of the 240 households sampled, interviews were completed with 92% (221 total, 154 male-headed and 67 female-headed); 19 (16 males and one female) were not available for interviews. Two questionnaires (male headed households) were dropped due to incomplete information.

Data collection

This study used quantitative and qualitative methods. A structured questionnaire was utilized to collect quantitative information on (a) types and sources of information, (b) relations involving access to land, labor, and information, and (c) types of training received (agricultural technical assistance). Information was also collected on selected assets as well as demographic and socioeconomic characteristics (age, sex, and educational level of household heads) to examine social factors that may shape resource access. Qualitative information was collected through direct observations and informal discussions with farmers as well as attending group saving meetings.

Variables

The summary and description of the variables used in the study are presented in (Table 2.1 and Table 2.1). After attempting to utilize the log transformation for correcting the skewedness in data was unsuccessful, logistic regression was the appropriate method and was selected to analyze the data. This statistical limitation has resulted in the grouping and

dichotomization of some of the variables - more details are provided in the following pages. Eight variables of agricultural technical assistance were included. The first variable measured training in land preparation techniques, including tillage and appropriate time to plough the land. The second variable measured training in crop planting techniques, such as planting and proper spacing of crops. The third and fourth variables measured training in chemical fertilizers and herbicide/pesticide usage. The fifth and the sixth variables measured training in manure application and natural methods for controlling weeds. The seventh variable measured training in post-harvest crop handling and storage, and the final variable measured training in marketing skills, including group marketing and price bargaining skills. We asked respondents to name the types of training that they received from the project and their responses were recorded. Due to the relatively small sample size and the number of variables examined and categories in each, the variables were equally weighed and aggregated into an index and coded low for 2-4 types of trainings, medium for 5 types, and coded high for 6-7 types prior to running the bivariate analysis. Agricultural tools/inputs (hoes, ox-plough, and seeds) are used to measure key physical resources that households use to improve production.

Three variables were used to measure the social networks of persons with whom the household members interacted and from whom they accessed resources - the total number of such persons; relatives network - the number of relatives is used for measuring bonding social capital; and non-relatives network - relationships other than relatives is used for measuring bridging social capital. Respondents were asked to name up to five people from whom they rented land, received help with labor, accessed and discussed information, borrowed money, received remittances, and/or received assistance and support during crisis (Appendix 1)[i] the names and relationships were recorded. Based on the responses, network size was coded ‘small’

for network size involving a total of up to 2 people and ‘large’ for total of 3-5 people. Similar coding was used for both relatives network and non-relatives network.

Three socio-demographic variables were selected: age, sex, and education. Age was grouped into young (20-34 years), middle-aged (35-39 years), and older (50 years or more) to distinguish between young, middle-aged, the older household heads. Similarly, education was grouped into two categories lower primary (0-7 years of schooling) and upper level (8 years of schooling or more). Regarding socioeconomic factors, four variables reflecting asset ownership were included. The first set of variables measured total cultivated land in acres, including land accessed through rental. Land was grouped into three categories to compare those having small, average, and larger land size. The second set of variables measured the amount of livestock owned, the third set of variables measured farm equipment, and the last set of variables measured home possessions. Selected household possessions are those that are considered valuable and can be used as indicators of relative wealth. An overall index of livestock owned was created and each type of livestock was weighted using standardized livestock units (Chilonda and Otte 2006); the resulting values were grouped into three categories due to data skewedness. The data were not normally distributed, with the presence of many outliers. Even after grouping the data into categories, there were still few categories or empty cells in some cases, which violates the assumptions of logistic regression. This led to regrouping data and sometimes dichotomizing variables. Given the skewedness in the data, an index of the total value household possessions was calculated using the market value of new items in 2011 (CSRL 2011). The total value in Ugandan Shillings was grouped into three categories. The remaining sets of variables measured various sources from which respondents accessed land, labor, and information.

Table 2.1. Summary of variables used in the study

Variable	Description
Agricultural Technical Assistance	1. Training received
Agricultural Tools and Inputs	1. Hoes 2. Ox-plough 3. Seeds
Social Capital	
Network Size	1. Total network size
Non-relative Network	1. Non-relatives network
Relative Network	1. Relatives network
Household Demographics	
	1. Age category of household head
	2. Sex of household head
	3. Educational level of household head
Household Socio-economic	
	1. Total cultivated land in acres
	2. Livestock standardized units
	3. Value of home possessions
Resource Access	
	1. Land rented for farming
	2. Labor assistance received
	3. Information accessed

Data analysis

Descriptive statistics (frequencies, means, and medians) were used to characterize respondents. Chi-square was used to test whether there were relationships between socio-demographics and the level of participation, social networks, and assets (land, livestock, and home possessions). *P* value <0.05 was used to identify statistical significance, as well as a less conservative *p* value <.10 due to the small sample size and grouping of variables into categories which decreased predicting power (Menard 1995).

Results and discussion

Household characteristics

The participants in this research project were formerly displaced rural households from Langi - a majority ethnic group in Lira district. Despite the loss of assets and damaged infrastructure, a common dream for IDPs and refugees is to return home after the war and re-establish their livelihoods and improve their well-being. Following the peace agreement in 2006, formerly displaced households that spent decades in camps began to return home and resettled in their original areas or other places, mostly in rural areas. With assets destroyed during the war, households have had to re-establish themselves by re-building their houses, secure their own food, educate their children, and meet health care needs. Dependent on natural resources and agriculture being subject to climatic variability, achieving goals is not easy for post-conflict households in Lira. A common strategy to deal with challenges associated with limited resources is working together and pooling of resources. Informal associations or groups with various motives and goals are prevalent in the area. These initiatives are augmented by support from NGOs and government agencies in terms of extension services and material provisions.

Table 2.2 summarizes respondents' sources of livelihoods and socio-demographic characteristics. Multiple response frequencies indicate that agriculture was the main source of livelihood in the area with the majority (96%) relying on crops, supplemented by livestock (65%), casual labor (55%), and trade including roadside selling and kiosks (27%). A variety of crops were grown in the area; these include maize (96%), cassava (96%), beans (93%), sweet potatoes (87%), groundnuts (79%), sesame (69%), millet (60%), sunflower (57%), sorghum (55%), soybeans (50%), and cotton (26%). Pigeon peas, rice, and a variety of vegetables were

also grown. Landholdings were moderate, with a mean of 5.25 acres and a median of 4 acres. A majority (69%) of the households have access to cultivate 5 acres of land or less.

Table 2.2. Source of livelihoods and household characteristics by gender

Household Characteristics	Percent			p-value (χ^2)
	Male-headed	Female-headed	Overall	
Livelihood Source				
Crop/Farming	95.5	95.5	95.5	.982
Livestock	65.6	62.6	64.7	.679
Casual Labor	34.6	35.8	35.0	.866
Trade (kiosks)	26.6	28.4	27.1	
Age in Years				.148
20 – 34	32.5	16.4	27.6	
35 – 49	37.7	43.3	39.4	
50 or older	29.9	40.3	33.0	
Educational Level				.000
(0-7 years)	10.4	77.6	30.8	
(8 or more years)	89.6	22.4	69.2	
Religion				.423
Catholic	42.2	34.3	39.8	
Protestant	40.3	41.8	40.7	
Other	17.5	23.9	19.5	
N	154	67	221	

Table 2.3. Household assets and characteristics by gender

Variable	Means			p-value for ANOVA
	Male-headed	Female-headed	Overall	
Socio-demographic	Years			
Age	42.7	46.6	43.9	.063
Socioeconomic	Acres/standardized units			
Total cultivated land (acres)	5.6	4.5	5.3	.068
Livestock units owned	1.5	1.1	1.4	.019
Value of Home Possessions (UGX 1000)	190	85	158	.000
N	154	67	221	

Livestock were few in the area; however, most respondents (88%) owned chickens, 82% owned at least a goat, 65% owned at least one cow, but only 13% owned at least one pig, and only 6% owned at least one sheep. Assessment of farm equipment and household possessions

indicates that 46% of the households have access to an ox-plough, with male-headed households more likely to access an ox-plough than female-headed households. 69% of the respondents owned a bicycle, 66% owned a radio, and 38% owned a mobile phone. The mean age of the respondents was 44 years and the median was 40. The average household size was six persons. Regarding religion, all the respondents were Christians, predominantly Roman Catholics (40%) and Protestants (41%); the rest (19%) were Pentecostals and Seventh Day Adventists. Education was modest, with 69%) have upper primary education (8 or more years of schooling) and 31% having lower primary or no formal education (0-7 years of schooling). Educational levels were significantly higher among younger and middle-aged household heads.[2] We also found significant differences between female and male respondents in terms of educational level, with females having less education (Table 2.2).

[2] Educational level of household head by age category

Educational Level (%)	Age categories of household head			Overall
	20-34 years	35-49 years	51 + years	
Educational Level (p =.005)				
(0-7 years)	16.4	28.7	45.2	30.8
(8 years or more years)	83.6	71.3	54.8	69.2
N	61	87	73	221

Impact of agricultural technical assistance and social capital on access to resources

Tables 2.4 - Table 2.7 present a summary of evidence regarding relationships among agricultural technical assistance, social capital, and resource access. Consistent with the hypothesis, we found positive associations between land rented and livestock units with agricultural technical assistance received (Table 2.4). As expected, we observed positive associations between social capital and ownership of assets (land and home possessions) (Appendix 2).[ii] In Lira, accessing land through rent was common, with about half (48%) of households renting land from friends and relatives. Respondents reported 187 incidents of land rental in the preceding 12 months, with most (87%) rented from male-headed households reflecting the predominance of male control over the land in the area. Methods of rent payment vary, with 61% paying the rent fee after harvest and 39% paying it prior to using the land. Because most households rented land from their peers, credit or collateral requirement was not a problem and most renters expressed satisfaction with the prices and rent contracts.

A majority (82%) of the respondents reported having received labor assistance from friends and relatives. Field observation also confirmed high labor cooperation among farmers participating in the project. Consistent with the hypotheses about the association between social capital and resources, results indicated both network size and relatives network were positively associated with land rented, labor, and information accessed (Tables 2.5 and 2.6). Further, non-relatives networks were positively associated with tools received, amount of land cultivated, livestock owned, and the value of home possessions. The size of a household's relatives network was positively associated with agricultural tools (hoes) received (Table 2.7).

Information was the most accessible resource, with most households accessing information through a variety of sources, including local traders, radio, friends, relatives, and

development organizations - consistent with the field research observations. Inputs and crop-selling prices were the most important type of information that households sought in the past 12 months.

A common feature of violent conflict is the destruction or alteration of community values and social relations (Zuckerman and Green 2004; Oxfam 2008; IDMC 2010) that may lead to social breakdown and diminished safety nets, which can impede progress in post-conflict recovery. Previous studies in Lira have reported severe disruptions and breakdown of social structures, resulting in widespread disputes over land and other resources, especially during the early phases of return (Oxfam 2008; IDMC 2010; Obaa 2011). However, this research revealed the prevalence of social capital in Lira manifested in a high degree of cooperation and reciprocity among households in terms of resource exchange. Experiences of war and diminished resources may have created the need to expand the social networks necessary for survival. In general, both quantitative analysis and field research observations indicate that participation in the food security project has reinforced social capital, engendered new cooperation, and the exchange of resources that may not have existed before. Development organizations strengthened bridging social capital, human capital (information and knowledge) through training, and physical capital (tools, seeds, and livestock) and hence, increased core livelihood resources that are central features in the sustainable livelihoods approach. Project activities enhanced political capital by organizing stakeholders' forums where farmers, representative of various development organizations and local government officials occasionally meet and discuss issues related to rural development and agricultural policies. It also provided bridging social capital and enhanced human capital by providing information and transportation to meetings where farmers discuss their conditions with policy makers of their respective districts. Cultural capital was not directly

addressed. For example, there was no interest on the part of project leaders in understanding indigenous seeds and the knowledge embodied therein; instead, farmers were encouraged to adopt hybrid seeds and use chemicals to protect seeds from pests, reflecting the agricultural development paradigm of the funding organization.

Table 2.4. Agricultural technical assistance by household resources

Dependent Variable	% Agricultural Technical Assistance Received			Overall	p-value (χ^2)
	Low	Medium	High		
Agricultural Tools and Inputs					
Hoes *	67.7	74.2	61.9	68.8	.260
Land Cultivated (acres)					.145
(1.5 - 2.9 acres)	44.6	30.1	30.2	34.4	
(3 - 4.9 acres)	35.4	37.6	31.7	35.3	
(5 acres or more)	20.0	32.3	38.1	30.3	
Livestock (standardized units)					.032
Low (≤0.05)	44.6	23.7	27.0	30.8	
Medium (0.51-1.52)	23.1	30.1	38.1	30.3	
High (1.53-1.57)	32.3	46.2	34.9	38.9	
Value of Home Possessions (UGX 1000)					.149
Low (≤85)	41.5	25.8	27.0	30.8	
Medium (86-180)	35.4	38.7	33.3	36.2	
High (>180)	23.1	35.5	39.7	33.0	
Access to Resources					
Rented Land *	38.5	57.0	41.3	47.1	.040
Received Labor Assistance *	81.5	83.9	81.0	82.4	.877
Accessed Information *	44.6	59.1	57.1	76.6	.170
N	65	93	63	221	221

*Dichotomous variable

Table 2.5. Social network size by household resources

Dependent Variable	% Network Size		Overall	p-value (χ^2)
	Small (0-2 persons)	Large (3-5 persons)		
Agricultural Tools and Inputs				
Hoes *	59.3	78.7	68.8	.002
Land Cultivated (acres)				.000
(1.5-2.9)	46.0	22.2	34.4	
(3-4.9 acres)	35.4	35.2	35.3	
(5 acres or more)	18.6	42.6	30.3	
Livestock (standardized units)				.235
Low (≤0.05)	34.5	26.9	30.8	
Medium (0.51-1.52)	31.9	28.7	30.3	
High (1.53-1.57)	33.6	44.4	38.9	
Home Possessions Value (UGX 1000)				.000
Low (≤85)	38.9	22.2	30.8	
Medium (86-180)	42.5	29.6	36.2	
High (>180)	18.6	48.1	33.0	
Access to Resources				
Rented land *	31.9	63.0	47.1	.000
Received labor assistance *	68.1	97.2	82.4	.000
Accessed information *	43.4	65.7	54.3	.001
N	113	108	221	

*Dichotomous variable

Table 2.6. Non-relatives network by household resources

Dependent Variable	% Network Size		Overall	p-value (χ^2)
	Small (0-2)	Large (3-5)		
Agricultural Tools and Inputs				
Hoes *	68.4	69.0	68.8	.919
Land Cultivated (acres)				.003
(1.5-2.9)	44.3	28.9	34.4	
(3-4.9 acres)	39.2	33.1	35.3	
(5 acres or more)	16.5	38.0	30.3	
Livestock (standardized units)				.075
Low (≤0.05)	39.2	26.1	30.8	
Medium (0.51-1.52)	30.4	30.3	30.3	
High (1.53-1.57)	30.4	43.7	38.9	
Value of Home Possessions (UGX 1000)				.004
Low (≤85)	35.4	28.2	30.8	
Medium (86-180)	45.6	31.0	36.2	
High (>180)	19.0	40.8	33.0	
Access to Resources				
Rented Land *	25.3	59.2	47.1	.000
Received Labor Assistance *	65.8	91.5	82.4	.000
Accessed Information *	40.5	62.0	54.3	.002
N	79	142	221	

*Dichotomous variable

Table 2.7. Relatives network by household resources

Dependent Variable	Relatives Network		Overall	p-value (χ^2)
	small (0-2)	Large (3-5)		
Agricultural Tools and Inputs				
Hoes *	62.6	73.8	68.8	.075
Land Cultivated (acres)				.536
(1.5-2.9)	36.4	32.8	34.4	
(3-4.9 acres)	31.3	38.5	35.3	
(5 acres or more)	32.3	28.7	30.3	
Livestock (standardized units)				.109
Low (≤0.05)	26.3	34.4	30.8	
Medium (0.51-1.52)	37.4	24.6	30.3	
High (1.53-1.57)	36.4	41.0	38.9	
Value of Home Possessions (UGX 1000)				.788
Low (≤85)	30.3	31.1	30.8	
Medium (86-180)	34.3	37.7	36.2	
High (>180)	35.4	31.1	33.0	
Access to Resources				
Rented land *	43.4	50.0	47.1	.331
Received labor assistance *	68.7	93.4	82.4	.000
Accessed information *	58.6	50.8	54.3	.249
N	99	122	221	

*Dichotomous variable

Impact of socio-demographic and socioeconomic factors on resources and assets

Our final hypothesis concerned associations between household head's characteristics (age, sex, and education), and social network, agricultural technical assistance, social capital, and assets owned. Results indicate that middle-aged household heads tended to receive more agricultural technical assistance but the difference was not significant (Table 2.8). Significant associations were found between social capital and age and education, with middle-aged and better educated household heads having a larger network size and non-relatives network/bridging social capital than the younger, older, and less-educated household heads.

Accessing land through rent was strongly associated with age (Table 2.8), with middle-age household heads accessed more land than younger and older household heads ($\chi^2 = 11.197$, df = 2, p = .024). Younger and middle-age household heads are those more likely to access land through rent. This indicates small landholdings among young adults who often received some land from their parents to begin to establish their livelihoods. Total cultivated land was larger among middle-age and more educated household heads. Male and better educated household heads were more likely to rent land, compared to their female counterparts. This finding suggests that the combination of males' social status and higher level of education affords them more advantages in terms of access and control over resources.

Information was accessible to most households; however, males and more educated household heads were more likely to engage in information-seeking, particularly crop selling price information. That is probably because males are generally responsible for marketing crops while females mostly produce for household consumption. Regarding farming tools received from the project, we observed that female household heads received more farming tools, reflecting explicit project efforts to target vulnerable groups. A significant association was observed between levels of assets owned and respondents' socio-demographic characteristics. In terms of the value of possessions that could indicate possible asset accumulation and relative wealth in the district, results indicate that younger and middle-age and male household heads have higher levels of home possessions value. In addition, male and better educated household heads have higher levels of livestock units.

Table 2.8. Percent distribution of resources and assets by age of household head

Variable	Age Category			p-value (χ^2)
	20-34	35-49	51 +	
Agricultural Technical Assistance				.052
Low (2-4 types)	35.4	30.8	33.9	
Medium (5 types)	29.0	35.5	35.5	
High (6-7 types)	17.5	54.0	28.6	
Social Network Size				.249
Low (0-2 people)	26.5	35.4	31.8	
High (3-5 people)	28.7	43.5	27.8	
Relatives Network				.324
Low (0-2 people)	32.3	38.4	29.3	
High (3-5 people)	23.8	40.2	36.1	
Non-relative Network				.046
Low (0-2 people)	19.0	39.8	41.8	
High (3-5 people)	32.4	39.4	28.2	
Land Cultivated (acres)				.024
Small (1.5-2.9 acres)	36.8	34.2	28.9	
Medium (3-4.9 acres)	29.5	33.3	37.2	
Large (≥5 acres)	14.9	52.2	32.8	
Livestock (standardized units)				.554
Low (≤0.05)	29.4	35.3	35.3	
Medium (0.51-1.52)	29.9	34.3	35.8	
High (≥ 1.53)	24.4	46.5	29.1	
Value of Home Possessions (UGX 1000)				.000
Low (≤85)	24.6	24.1	43.8	
Medium (86-180)	26.2	39.1	41.1	
High (≥180)	49.2	36.8	15.1	
Access to Resources				
Rented Land *	37.5	37.7	25.0	.004
Received Labor Assistance *	28.6	40.7	30.8	.303
Accessed Information *	28.3	42.5	29.2	.388
N	61	87	73	221

*Dichotomous variable

Table 2.9. Sex of household head by agricultural technical assistance, social capital, and resources

Variable	Percent		p-value (χ^2)
	Male-headed	Female-headed	
Agricultural Technical Assistance			.222
Low (2-4 types)	26.0	37.3	
Medium (5 types)	43.5	38.8	
High (6-7 types)	30.5	23.9	
Agricultural Tools and Inputs			
Seeds	98.7	100.0	.349
Hoes *	63.0	82.1	.005
Ox-plough	51.3	32.8	.011
Social Network Size			.273
Low (0-2 people)	48.7	56.7	
High (3-5 people)	51.3	43.3	
Relatives Network			.909
Low (0-2 relatives)	44.8	44.8	
High (3-4 relatives)	55.2	55.2	
Non-relatives Network			.988
Low (0-2 friends)	35.7	35.8	
High (3-4 friends)	64.3	64.2	
Land Cultivated (acres)			.622
(1.5-2.9 acres)	32.5	38.8	
(3-4.9 acres)	35.7	34.3	
(5 acres or more)	31.8	26.9	
Livestock (standardized units)			.019
Low (≤0.05)	25.3	43.3	
Medium (0.51-1.52)	34.4	20.9	
High (1.53-1.57)	40.3	35.8	
Home Possessions Value (UGX 1000)			.000
Low (≤85)	18.2	59.7	
Medium (86-1800)	39.0	29.9	
High (>180)	42.9	10.4	
Access to Resources			
Rented Land *	50.6	38.8	.105
Received Labor Assistance *	80.5	86.6	.278
Accessed Information *	62.3	35.8	.000
N	154	67	221

*Dichotomous variable

Table 2.10. Education level by household resources

Variable	% Educational Level		p-value (χ^2)
	0-7 years	8+ years	
Agricultural Technical Assistance			.013
Low (2-4 scores)	41.2	24.2	
Medium (5 scores)	41.2	42.3	
High (6-7 scores)	17.6	33.3	
Social Network Size			.035
Low (0-2 people)	61.8	46.4	
High (3-5 people)	38.2	53.6	
Relatives Network			.310
Low (0-2 people)	39.7	47.1	
High (3-5 people)	60.3	52.9	
Non-relative Network			.042
Low (0-2 people)	45.6	31.4	
High (3-5 people)	54.4	68.5	
Land Cultivated (acres)			.083
Small (1.5-2.9 acres)	44.1	30.1	
Medium (3-4.9 acres)	33.8	35.9	
Large (≥5 acres)	22.1	33.0	
Livestock (standardized units)			.003
Low (≤0.05)	45.6	24.2	
Medium (0.51-1.52)	19.1	35.3	
High (≥1.53)	35.3	40.5	
Home Possessions Value (UGX 1000)			.000
Low (≤85)	58.8	18.3	
Medium (86-180)	30.9	38.6	
High (≥180)	10.3	43.1	
Access to Resources			
Rented Land *	36.8	51.6	.041
Received Labor assistance *	83.8	81.7	.702
Accessed Information *	36.8	62.1	.000
N	68	153	221

*Dichotomous variable

Results of logistic regression

Logistic regression is a form of multivariate regression in which the dependent variable is categorical and the independent variables are continuous or categorical. While bivariate analysis tests associations between two variables, logistic regression involves testing more than one dependent variable simultaneously, while taking into account the effect of other variables on the outcomes of interest. For example, in this study logistic regression tests the effects of social networks on resource access while controlling for the effects of other variables such the educational level of the household head. Logistic regression was selected in this study after log transformation failed to correct the skewedness of the data, leading to the grouping of some of the independent and dependent variables into categories. Unlike linear regression that predicts the value of an outcome (Y) from a predictor variable (X_1) or set of predictors (X_n), logistic regression predicts the probability of an outcome (Y) occurring given known values of a predictor. *P* value <0.05 was used to identify statistical significance, as well as a less conservative *p* value <.10 due to the small sample size and grouping of variables into categories which decreased predicting power (Menard 1995).

Three logit models were tested and significantly predict the impacts of agricultural technical assistance received, social capital assets owned, as well as the contribution of education to resource access. Each of the models has a different dependent variable, with a range of independent variables included in the equation. Model 1 tests relationships between land, network size and non-relatives network, and educational level of household head. Model 2 tests factors affecting livestock ownership, and Model 3 tests associations between the value of home possessions with and network size.

Before performing logistic regression, we conducted a collinearity diagnosis. Multicollinearity is a potential problem in logistic regression that arises from high correlations among independent variables which can lead to biased estimates. Two robust tools for detecting the presence of collinearity are Variance Inflation Factor (VIF) and Tolerance Statistics. According to Menard (1995), a VIF greater than 10 is a cause of concern while a tolerance below 0.2 indicates a potential problem and a tolerance below 0.1 indicates a serious problem. The test results indicate VIF values are below 10 and the Tolerance values are above 0.2. Therefore, all variables were used in the analysis. The independent variables selected for multivariate logistic regression analyses were agricultural technical assistance, social network size and non-relatives network size, and educational level of household head. The dependent variables used were land cultivated in acres, livestock owned, and value home possessions. Bivariate results indicated significant associations between the selected variables; therefore, we used logistic regression to further examine these relationships.

Factors predicting resource access in Lira

Consistent with the hypothesis, agricultural technical assistance received was positively associated with livestock ownership (Models 2). Concerning social capital, respondents having a larger network size and larger non-relatives network were 3.5 times and 2 times more likely, respectively, to access more land (5 acres or more) than respondents with smaller networks. Respondents having a larger network size were 2 times more likely to have medium and 4 times more likely to have large landholdings. This finding supports our hypothesized positive associations between social capital and the resources necessary for improving livelihoods, as found previously (Obaa 2011). As hypothesized, educational level was positively associated with livestock ownership, with household heads having 8 or more years of schooling being 3 times

more likely to own medium levels of livestock units and 2 times more likely to possess a higher number livestock units (Model 2).

Table 2.11. Multinomial logistic regression of household characteristics with resources and assets

	Variable	**Exp (B)**	**S.E.**
Model 1	*Land Cultivated (acres)*	*	
Medium (3-4.9)	Larger Network Size (3-5 people)	1.98*	0.354
	Larger non-relatives Network (3-5 people)	1.01	0.349
	Educational Level (8 years or more)	1.45	0.348
Large (5+)	Larger Network Size (3-5 people)	3.56***	0.381
	Larger non-relatives Network (3-5 people)	2.20*	0.413
	Educational Level (8 years or more)	1.77	0.396
Model 2	*Livestock ownership*	*	
	Agricultural Technical Assistance		
Medium (0.51-1.50)	Medium (5 types)	2.29*	0.444
	High (6-7 types)	2.20*	0.467
	Larger Network Size (3-5 people)	0.87	0.368
	Educational Level (8 years or more)	3.17**	0.405
High (>0.51)	Medium (5 types)	2.36**	0.401
	High (6-7 types)	1.46	0.446
	Larger Network Size (3-5 people)	1.34	0.344
	Educational level (8 years or more)	1.97*	0.356
Model 3	*Value of home possessions (1000 UGX)*	*	
Medium (86–180)	Larger Network Size (3-5 people)	1.22.	0.341
High (>180)	Larger Network Size (3-5 people)	4.54*	0.362

The reference categories are:

a. Small land size (1 - 2 acres)
b. Low (0.0 - 0.5) livestock (standardized units)
c. Low (0.00 -170) UGX value of home possessions
d. * significant at $p < .10$ ** significant at $p < .05$ *** significant at $p < .01$

Conclusion

The aim of this study was to examine the relationships between agricultural technical assistance, social capital, and access to productive resources among formerly-displaced farm households in post-conflict Lira in northern Uganda. The study also examined how age, sex, and

educational level of household heads influence resource access in war-affected farm households in Lira. In general, a higher level of agricultural technical assistance was associated with higher access to resources, particularly land rent. This suggests that people who received more training rent additional farming land to increase production accumulate assets.

Despite the impact of war, embedded resources, particularly social capital, remains central to achieving viable livelihoods among post-conflict farm households. With most assets lost during the war, social networks have become crucial for resource access and safety nets. Consistent with other studies (Obaa 2011; Sseguya 2009), most households in Lira rely heavily on their peers for accessing key resources such as farming plots, small loans, and labor. One of the key findings to emerge from this study is that bridging social capital in terms of non-relatives network was significantly associated with productive resources accessed and household asset ownership, thus confirming results from other studies regarding the importance of this form of capital. Farmers with relatively more friends rather than relatives in their networks had better access to resources and owned more assets than those whose networks were comprised primarily of relatives. Access to production and marketing information is difficult among rural households in sub-Saharan Africa; however, information was readily available to most farmers in Lira through a variety of sources, although the quality of the information received was not examined in this study.

Together, the findings demonstrate that poor people are resourceful and strategically use available local assets in combination with external support to manage dynamic livelihoods, highlighting the need for a paradigm shift from supply-driven and emergency-based assistance to a long term development approach by strengthening and supporting household capacities (Chambers and Conway 1992; Longley et al. 2007). As anticipated, this research revealed the

influence of socio-demographic characteristics, particularly educational level of the household head on agricultural technical assistance received, resource access, and asset accumulation. This suggests that male household heads who were more educated received more agricultural technical assistance. Their privileged social position in the community, as well as their educational advantage over females, enabled their households to derive more benefits from external support. It is therefore important for project efforts to target the most vulnerable population groups, particularly those with low education - including female head of households, to minimize elite capture.

Despite the influence of socio-demographic factors, however, both quantitative and qualitative analyses indicated that groups are heterogeneous, and there was no indication of any exclusion based on socio-demographic characteristics. The role of external support in enhancing social capital was evident. Although farmers may independently form their own groups, development organizations generally enhance inclusive social capital and other core livelihood resources in post-conflict communities by organizing or supporting farmer groups. For example, the study revealed that participation in the project enhanced human capital in terms of information and knowledge through training, bridging social capital through group dynamics and capacity building, and physical capital though provision of tools, seeds, and livestock. Project staff also enhanced farmers' political capital by organizing stakeholders' forums at the district level as well as providing information, accommodation, transportation to conferences at the national level where farmers discuss agricultural policies with policy makers from their respective districts.

With regard to theoretical implications, the addition of political and cultural capital to the five original capitals of the sustainable livelihood framework was crucial and provides a holistic

approach for understanding external factors and the vulnerability context affecting people's livelihoods in post-conflict sittings. For example, rural households in sub-Saharan Africa have little power and less influence on policies affecting their lives. Therefore, enhancing their political capital is important so that farmers can effectively advocate for their own interests and affect policy changes. Cultural capital is crucial for knowledge transmission, such as the knowledge of indigenous seeds and other types of local farming techniques and practices. Approaches that ignore cultural capital, such as encouraging only the use of hybrid seeds and inorganic pesticides is unsustainable and inconsistent with the sustainable livelihoods approach. Mixed methods in terms of utilizing both quantitative and field research observations were crucial for understanding the various factors affecting resource access and livelihoods in Lira. Field research observation and informal discussions with farmers were crucial for gaining in-depth knowledge about the conditions of the households. This study advances knowledge of important factors that mediate access to key resources in post-conflict communities, with the implication that effective external support requires a proper understanding of productive resources and structural factors that may enhance or restrict access to productive resources, thus suggesting the need for better assessment and understanding of local dynamics in development settings. Development programs that fail to understand and recognize local resources and assume homogeneity among the poor, particularly in post-conflict communities, may unintentionally bypass the appropriate target group and increase inequality.

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CHAPTER THREE. SOCIAL CAPITAL, AGRICULTURAL TECHNICAL ASSISTANCE AND FOOD SECURITY IN POST-CONFLICT LIRA, NORTHERN UGANDA

Manuscript for submission to *Community Development Journal*

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Abstract

While a strong relationship has been established between social capital and food security generally, it is unclear whether it holds up in post-conflict situations. This study examines associations between social capital and food security among formerly displaced farm households in post-conflict Lira district, northern Uganda. A second objective is to identify socio-demographic and socioeconomic characteristics associated with food security. Food security was measured using the validated Household Food Insecurity Access Scale (HFIAS). Data were collected from March-July 2011 through interviews with 221 heads of household. Consistent with hypotheses, significant positive associations exist between social capital and household food security. Logistic regression analyses revealed significant associations of food security with age (younger), sex (masculine), education (higher) of household head, amount of cultivated land, and farm and home possessions. Results can aid the design of effective food security programs that support people initiatives and strengthen social networks while targeting the most vulnerable groups and promote sustainable livelihoods in post-conflict communities.

Keywords: social capital, food security, agricultural technical assistance, post-conflict, Uganda

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Introduction

Food insecurity and hunger remain central concerns in developing countries, particularly in rural areas. Despite substantial reduction in poverty and food insecurity during recent decades, 12.5% of the world's population is still food insecure and 26% of the world's children are stunted (UNDP 2013). Despite its abundant agricultural resources able to produce sufficient food to meet the dietary requirements for its population, sub-Saharan Africa (SSA) has the highest incidence of food insecurity and malnutrition (Mwaniki 2006; UNDP 2013). Numerous factors, including poverty and low agricultural yields associated with limited access to productive resources (land, credit, labor, and information), are among the leading causes of food insecurity and hunger in the region. Political instability manifested in widespread violent conflict in SSA has also exacerbated food insecurity among rural communities (UNDP 2013). Other emerging threats to food security in SSA include the surge in population and climatic variability. Pervasive food insecurity across the region casts doubt on SSA countries' ability to achieve the first Millennium Development Goal (MDG) of reducing by half the number of people living in extreme poverty and hunger (UNDP 2013).

Despite serious challenges, Uganda has made substantial progress in reducing poverty and food insecurity. Nationally, poverty declined from 56% in 1992 to 24.5% in 2009/2010 (UNDP 2013; WFP 2013). Subsequently, food insecurity and malnutrition have significantly declined in both rural and urban areas (UNDP 2013). The Africa Millennium Development Goal (MDG) report in 2013 indicates that Uganda is close to reaching the target of halving the number of people living in extreme poverty and hunger by 2015. Despite significant progress, however, poverty and food insecurity are still pervasive in Uganda. The concept of food security, its definition and measurement will be discussed and elaborated later in the paper.

The WFP Uganda 2013 Comprehensive Food Security and Vulnerability Analysis indicates that a quarter of Ugandans still live below the poverty line. Poverty remains a predominantly rural phenomenon, with 30% of the rural population living below the national rural poverty line. Nationally, about half (48%) of Ugandans were food insecure between September 2009 and August 2010. One-third of Ugandan children were stunted, with the severity and frequent exposure to food insecurity and malnutrition higher in rural areas. Still recovering from the devastating civil war from 1986 -2006, northern Uganda continues to lag behind the nation with the highest incidence (59%) of food insecurity in the nation (WFP 2013). Limited access to basic services such as health care further complicates the situation (Oxfam 2008; IDMC 2010). Such food insecurity has long lasting and detrimental consequences on human health and economic productivity.

Protracted war between the Lord's Resistance Army (LRA) and the Government of Uganda (GoU) resulted in enormous loss of human life, destroyed resources, and eroded social structures. During the war, 1.8 million people were forcibly displaced to camps (Oxfam 2008; IDMC 2010). However, following the peace agreement signed in 2006, a majority of the displaced households have either returned to their areas of origin or resettled in new locations (IDMC 2010). Returning to areas devastated by war is generally problematic. Food insecurity and inadequate access to basic services such as health care, present serious problems (Oxfam 2008). In response to this situation, humanitarian and government agencies have initiated a number of interventions to improve food security among farm households. Most of the population in Uganda is rural (86%), relying on subsistence farming as the main source of livelihood and income (UNDP 2013). Regarding access to land - the single most important resource in the area, returning households have resettled in their original villages and have access

to some or all of their original land; those who have small amounts of land or have sufficient capital have hired additional land from peers to increase production. Given their reliance on agriculture, efforts to improve food security among households are directed towards agricultural revitalization through provision of seeds, tools, and training in agronomy. The efficacy and sustainability of external interventions to improve conditions depends on proper understanding and recognition of people's initiatives to improve their own conditions (Chambers 1997). In post-conflict situations, vulnerable groups, such as female-headed households and the elderly, are more prone to food insecurity and malnutrition (Stites, Mazurana, and Carlson 2006). One-quarter of the returned households in northern Uganda were headed by females (IDMC 2010). While land is the most important agricultural resource, entrenched cultural bias that deprives women of control over land increases the risks of food insecurity among female-headed households.

Food Security - definition and application

Initial conceptualization of food security in the 1970s was concerned with overall availability of food supply at the regional and national levels. However, realization that large population segments remained food insecure despite significant increases in aggregate food supply at the regional, national, global levels prompted a paradigm shift to consider issues of access to food at the household and individual levels (Maxwell and Smith 1992; FAO 1996). Subsequently, conceptualization of food security evolved, along with its definition, to address its multiple dimensions in various socio-cultural settings. The Food and Agriculture Organization of the United Nations (1996:3-4) defines food security as a condition "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active healthy life." Food insecurity refers to "limited or

uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire foods in socially acceptable ways" (Bickel et al. 2000:6).

For households and individuals to be food secure, food must be available in sufficient supply, accessible, and properly utilized. Availability of food is achieved through domestic production, commercial food imports, or food aid. Food accessibility is achieved through access to necessary resources, purchasing power (Kennedy and Haddad 1992), and social support (Tsai et al. 2011; FAO 2013). Sufficient availability is an essential element of food security but does not guarantee adequate access for households. Income and social support determine household and individual access to food (FAO 2013). If sufficient and nutritious food is both available and accessible, the household can choose what food is purchased and consumed and how it is allocated within the household (Keenan et al. 2001. While shocks and stresses, such as conflicts and drought, may interrupt food supplies, restricted access to food due to poverty is regarded as the main barrier to achieving food security in developing countries (Mwanik 2006; Flora 2008). Uganda is no exception (WFP 2013). Given resource limitations, poor households depend on their social relations for mitigating risks associated with access to food. Therefore, understanding the strategies taken by households to improve conditions is essential for devising effective intervention programs.

Research has found positive associations between social capital and food security (Martin et al. 2004; Walker et al. 2007; Dean et al. 2011; Sseguya 2009; Obaa 2011); however, less research has focused on possible associations between social capital and food security in post-conflict situations (Obaa 2011).This study addresses this gap in the literature by examining possible associations between social capital and food security within Lira district, northern Uganda. The study also investigates the role of agricultural technical assistance in food security

outcomes. Agricultural technical assistance refers to a set of extension services, including training in land preparation techniques (tillage and timing); crop spacing; chemical fertilizer, herbicide, and pesticide usage; manure application; post-harvest crop handling and storage; and marketing skills (group marketing and price negotiation). The contribution of socio-demographic and socioeconomic characteristics of household heads on food security outcomes was also examined. This is accomplished within the context of a three-year post-conflict food security project implemented by Volunteer Efforts for Development Concerns (VEDCO), an indigenous non-governmental development organization, in partnership with Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance (ACDI/VOCA) in Lira district. In this research, we address the following questions: What is the relationship of social capital and food security in a post-conflict rural society? How does participation in group activities affect household food security outcomes? To what extent do socio-demographic characteristics (sex, age, and education) and socioeconomic factors (land and livestock ownership) influence food security among formerly displaced farm households?

Because this study focuses on people's capabilities and strategies to combine external support with local resources, the sustainable livelihoods (SL) approach is a vital tool for the collection and analysis of information. The approach is relevant in this study because it focuses on people's strengths and initiatives to help themselves. The sustainable livelihoods approach recognizes that people's livelihood strategies and well-being are contingent upon the types of assets to which they have access and over which they have control; the factors (economic and social) that shape access; and contextual issues at the local, national, and global levels. By utilizing the sustainable livelihoods approach as a tool for analyzing information, this study will

advance an understanding of the factors that may constrain or enhance a household's ability to improve food security in post-conflict situations.

Conceptual framework

A considerable body of research regarding poverty and food security in Uganda focuses on natural, financial, physical, and human capital endowments (Appleton et al. 1999; Ssewanyana and Kasirye 2010). Far less research has examined the possible contribution of social capital to increasing access to food security. This is especially true within conflict-affected communities. Within these communities, often characterized by insufficient assets, the most important resources are human and social capital (Mazur 2004). Therefore, investing in people as a means of enhancing these existing resources remains vital for improving food security and promoting sustainable livelihoods.

Since being articulated by Chambers and Conway in 1992, the concept of sustainable livelihoods has undergone modifications by scholars and development practitioners. According to Scoones (1998:5), "A livelihood comprises assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base." Alternatively, Singh et al. (1994:3) highlight elements of vulnerability (ownership, access, constraints, and decision making) by defining sustainable livelihoods as "People's capacities to generate and maintain their means of living, enhance their well-being and that of future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, socio-cultural, economic and political and are predicated on equity, ownership of resources and participatory decision making." Central to the concept of sustainable livelihoods is an understanding and recognition of

people's resourcefulness and constraints. Likewise, this perspective considers people's initiative to overcome constraints (Butler and Mazur 2007). The sustainable livelihood approach recognizes that households pursue dynamic livelihood strategies within a range of social, economic, political, and environmental constraints. Livelihood strategy refers to array of resources and social and economic activities that utilize those resources to achieve desired goals (Ellis 1998).

Core livelihood resources consist of human capital (knowledge and skills, good health and capacity to perform labor, education, leadership and information), social capital (networks, organization, and membership), physical capital (roads, farm implements/tools, and livestock), natural capital (land and water, perennial plants, and firewood), and financial capital (money, savings, remittances, and credit). Socioeconomic factors such as gender, education, and wealth influence livelihood resources and strategies leading to differential livelihood outcomes among social groups.

Like other concepts, the concept of sustainable livelihoods has limitations. For example, Murray (2001) points out that the approach underemphasizes elements of vulnerability such as macro-economic trends, conflict, and power inequities within and between communities and groups such as government officials. Flora and Flora (2004) recommend the use of the Community Capitals Framework (CCF), which incorporates political capital (the ability to affect rules and policies that determine access to resources) and cultural capital (values and customs that shape people's worldviews), in addition to the five capitals in the original sustainable livelihoods approach. According to Flora (2007:2), "Consideration of the seven capitals is critical in making sure that programs are both sustainable and effective." Given their lack of

sufficient assets, poor households heavily rely on their social networks involving kin, friends, and neighbors for resource access.

Social capital, resources access, and food security

Social capital has gained widespread attention among scholars and development specialists in recent decades. Bourdieu (1986:248-249) defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." Bourdieu conceives of social capital at the individual level emphasizing benefits that individuals derive from membership in groups as the motivation to engage in social networks. He argues that the volume of social capital that individuals possess is contingent upon the size of the network and the volume of capital (economic, cultural or symbolic) accruing to individuals as a result of engagement in the network. Other scholars conceptualize social capital at the community level. For example, Putnam (1993:35-36) refers to social capital as the "features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit." Flora and Flora (2008:117) describe social capital as an "attribute of communities, which is more than the summing up of individual social capital." Therefore, social capital can be described as an emergent quality of group or community interactions. Coleman (1988:98) states that "like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence."

In resource poor settings, people form groups such as savings groups or larger associations. These groups reinforce norms which then facilitate cooperation and collective action in order to achieve goals (Flora and Flora 2008). Regardless of different levels of analyses, a consensus exists among scholars that social capital is a resource embedded in social

relations and interactions which facilitates collective action. Within poor rural communities that lack sufficient resources, membership and participation in social networks becomes essential for accessing resources. Facilitating social capital fosters greater cooperation and networking within and between groups as well as within the larger community. Although research has linked social capital to food security at the household level both in developed countries (Tarasuk 2001; Martin et al. 2004; Walker et al. 2007) and developing countries (Sseguya 2009; Dhokarh et al. 2011), less has been done to understand potential links between social capital and food security in post-conflict settings.

Realization of social capital as an important livelihood resource among poor rural households has increasingly generated greater interest among scholars and development specialists. In recent years, this conceptualization has strongly influenced the design of development assistance programs in developing countries (Uphoff 2000; Narayan 2002). For example, in Lira district, farmer group formation has become an essential precondition for accessing project resources. Despite the relevance and popularity of the concept, measuring social capital remains a subject of debate. However, a considerable body of work exists that utilizes social network as a proxy with which to analyze and measure social capital. Knoke and Yang (2008:8) define a social network as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations." Central to social network analysis are the types of actors and the types of relationships among actors (Knoke and Young 2008). Actors may be individuals or group (formal and informal). Social network analysis seeks to understand bonds among actors and their implications in terms of resource exchanges (Wassermen 2005). Key social network characteristics include size and composition. Network size refers to the total number of connections, while network composition refers to different

types of connections (friends, relatives or organizations). Lin (1999) states that social capital finds its roots in social networks and should therefore be measured in relation to its roots. Other scholars use or advocate for the use of membership in networks for measuring social capital (Burt 1997; Portes1998; Krishna and Uphoff 1999; Narayan and Prichett 1999; Flap 2004). Given the varied levels of conceptualization, the measurement of social capital can be tailored to the unit of analysis used (Grootaert and Bastelaer 2001; Flora 2008). In this study, the household is used as the unit of analysis. We therefore conceptualize social capital at the household level, and drawing from the literature, we define social capital as a social network that has the potential to provide opportunities for leveraging resources.

Two types of social capital have been distinguished: bridging social capital and bonding social capital. Bridging social capital describes connections between diverse groups/communities and connections with outside groups and communities (Flora and Flora 2008). Bonding social capital refers to connections that exist within groups of similar backgrounds or interests including gender, ethnicity, kinship, and education (Flora and Flora 2004). Bonding social capital has the tendency to exclude certain groups and individuals. For example, in some cultures women may be excluded in groups and deprived of access to resources (Berry 1989; Narayan 2002), making them vulnerable to food insecurity. Bridging social capital describes networks among people from different socioeconomic and other social characteristics, such as ethnic background. The balance of both bridging and bonding social capital is important for effective community development, particularly in post-conflict people can reinforce norms of trust and inclusive network within their communities while expanding their networks to leverage resources from other communities or organizations. Key dimensions of social networks are size and composition. Network size refers to the total number of connections while network

composition refers to different types of connections, such as those with relatives, friends or organizations. In this study, relatives network and non-relatives network represent bonding and social capital and bridging social capital respectively. The questions addressed in this study are as follows: What is the impact of social capital (bonding and bridging) on food security among formerly displaced farm households in Lira district? How does possession of bonding and bridging social capital affect food security? To what extent do socio-demographic (sex, age, and education) and socioeconomic (land, livestock, and household possessions) factors influence food security?

While social capital is essential for leveraging resources and social support, the ability of households to secure benefits arising from membership in social networks may vary. Due to cultural norms and societal institutions, female-headed households are generally economically disadvantaged and thus are more prone to food insecurity. This is true even in developed countries, including the US and Canada (Tarasuk 2001; Walker et al. 2007). Given socio-cultural based inequalities in developing countries, socio-demographic and socioeconomic factors can greatly influence resource access necessary for achieving food security and sustainable livelihoods. For example, studies in Nigeria (Ajani 2006; Babatunde, Omotesho, and Sholotan 2007) and Uganda (Sseguya 2009; Obaa 2011) demonstrate the influence of household characteristics on food security outcomes among smallholders. Therefore, the influence of gender on food security is examined in this study by comparing male and female-headed households in terms of resource access and food security outcomes.

In this study, the following hypotheses will be assessed: (1) households whose heads have higher levels of social capital are more food secure than household heads with lower levels of social capital; (2) household heads having a larger non-relatives network have more access to

credit than households having a larger relatives network; (3) households whose head is younger, male, or better educated are more food secure than households whose head is older, female, or less educated; and (4) households with larger land holdings, own more livestock and home possessions are more food secure than households with smaller land holdings, own fewer livestock and home possessions.

Study area and methods

Study area

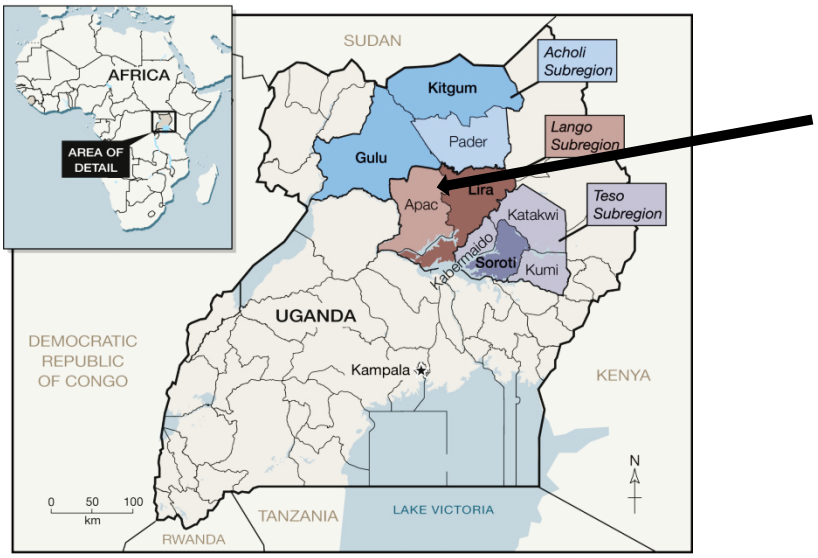
Because the objective of this research is to investigate the factors affecting access to resources in post-conflict settings and the impacts of external supports, Lira was selected as a study site due to its status as a post-conflict area where formerly-displaced households had recently returned home from camps and were receiving agricultural technical assistance. Lira is one of the five northern districts of Uganda; the district capital is 352 km north of Uganda's capital city, Kampala. It is bordered by the districts of Pader and Otuke in the north and northeast, Alebtong in the east, Dokolo in the south and Apac in the west (Figure 1). The district's altitude is 975-1,146m. Its coordinates are: 02^{o} 20' N, 33^{o} 06' E. It is characterized by a continental climate, with two peak rainy seasons: April-May and August-October.

The average annual rainfall is 1000-1500 mm. According to the National Census (2002), the district has a population of 757,763 (50.7% female). As of 2005, three counties (Otuke, Erute, Moroto) comprise the district and there are 18 sub-counties, 123 parishes and 1,546 villages (Uganda District Information Handbook 2005). The soil is primarily sandy loam, which covers most of the district. Agriculture is the main economic activity, with the majority (86%) of the population in Lira district living in rural areas and dependent on subsistence farming for their

livelihoods (UNDP 2007). Millet and sorghum, maize, sweet potatoes, cassava, peas, beans, sesame, groundnuts, and various vegetables are grown in the area. Cattle herding was an important livelihood activity and indicator of wealth before the war, but cattle rustling in the late 1980s and the rebel insurgency drastically reduced the livestock population in the district (Oxfam 2008). Other livestock reared in the district include chickens, pigs, and goats.

This study was conducted with former internally-displaced households that were participating in a three-year food security project implemented by VEDCO in two parishes of Apalla sub-county (Okwongole and Obin), two parishes of Aromo sub-county (Arwot-omito and Apuce), three parishes of Ogur sub-county (Akano, Adwoa and Akangi), and three parishes of Amach sub-county (Adyaka, Ayach and Banya). The last three parishes of Amach sub-county were incorporated in the project at the end of 2010. The overall goal of the project was to enhance the capacity of small-scale farmers to increase food production and utilization, improve sanitation, and develop agricultural marketing skills among 7,000 small-scale farmers in 4,200 households. This was accomplished through provision of agricultural extension services and training in various components, including agronomic practices, natural resource management, post-harvest crop handling techniques, business skills, nutrition, preparation and consumption of a balanced diet, and development of farmer organizations.

Figure 3.1. Map of Uganda showing the location of Lira District



Food and Agricultural Organization of the United Nation
http://www.fao.org/docrep/005/ac912e/ac912e03.htm

Population and sampling

A multi-stage sampling strategy was used in this study. To gain broader insights into household activities and project impacts, we included in the study all four sub-counties and parishes in each sub-county where the project operated. VEDCO's project activities were organized with parishes as the administrative units; therefore, parishes were used in this study for selecting the samples. To begin the sampling selection, lists of participating households were updated using group training attendance lists. With the help of project extension staff and the community based trainers (CBTs), names of household heads who were no longer participating in the project were excluded from the sampling frame. Systematic random sampling was used to select 180 male-headed households out of 3710 participating male-headed households (Table 1). Proportional sampling was utilized to draw samples from farmer groups in the parishes. Using similar methods, 60 female-headed households were randomly selected out of 341 participating

female-headed households representing all parishes except for three (Adyaka, Ayach, and Banya) of Amach Sub-county. These parishes were excluded because they were incorporated late in the project with no special consideration for female-headed households as in the other parishes. We found out during the interviews that seven of the 180 male-headed households sampled were female-headed and were included in the sample. Female-headed households comprise 24% of the returning households and were included in the study to assess the influence the sex of household heads on resource access and food security outcomes. Out of the 240 households sampled, interviews were completed with 92% (221 total, 154 male-headed and 67 female-headed); 19 (16 males and one female) were not available for interviews. Two questionnaires (male headed households) were dropped due to incomplete information.

Data collection

This study utilized quantitative and qualitative methods. Food security information was collected using a validated Household Food Security Scale (HFIAS). A structured questionnaire was utilized to collect information on social capital and participation in group activities. Other information collected included selected socio-demographics (age, sex, education) of household heads as well as asset ownership. The questionnaire was tested by interviewing 29 farmers and adjustments were made to reflect important insights that emerged. The interviews were carried out in a variety of settings, including respondents' homes, farms, church centers, market centers, and meeting places as preferred by the respondents. Two experienced research assistants were involved in data collection between March and July 2011. The research assistants completed the online human subjects training prior to beginning the interviewing activities.

Measuring food insecurity

With the shift in conceptualization, measurement of food insecurity has subsequently progressed beyond the micro indicators of availability and utilization to measuring access to food at the household level (Webb et al. 2006). While different methods (including food balance and anthropometric indicators) have been widely used to measure food security, these lack clear indicators and measurement for the access component of food security across diverse cultural settings (Bickel et al. 2000; Deitechler 2010). The current measuring tool for food security (Household Food Insecurity Access Scale) was adapted from the U.S. Household Food Security Survey Measure (HFSSM) developed by the USDA for exclusive use in the U.S. (Bickel et al. 2000). The original HFSSM consists of 18 questions that ask respondents about experiences related to food insecurity, including anxiety about household food supply, insufficient availability of food (quantity and quality, including social acceptability), insufficient food consumption, and the physical consequences.

The modified version, House Food Insecurity Access Scale (HFIAS), utilizes nine occurrence questions that ask whether a particular condition related to the experience of food insecurity has happened during the past four weeks or 30 days, with responses coded as 1 = yes and 0 = no. Each occurrence question is then followed by a frequency-of-occurrence question, which inquires how often a reported food insecurity condition occurred during the past four weeks (with three response options: 1= rarely, 2 = sometimes, and 3 = often). The household food security score variable is calculated by summing up the codes for each frequency-of-occurrence question (ranging from 0 to 9 points), with high scores indicating a high degree of food insecurity and a low score indicating a lesser degree of food insecurity (Coates, Windale, and Bilinski 2007:19). The relevance of HFIAS for measuring food insecurity in diverse settings

has been confirmed/validated through experiential research in developing countries (Frongillo and Namama 2006; Melgar-Quinonez et al. 2006; Knueppel, Demment, and Kaiser 2010).

Based on the scale, four categories of food security are constructed: (1) food secure, (2) mildly food insecure, (3) moderately food insecure, and (4) severely food insecure. A household is food secure if they only worry about not having enough food and only rarely. It was mildly food insecure if they worried about not having enough food sometimes or often, or were not able to eat the types of food they preferred at all, or had to eat a limited variety of foods or had to eat some foods that they really did not want to eat but only rarely. It was moderately food insecure if they had to eat a limited variety of foods or had to eat some foods that they really did not want to eat sometimes or often, or they had to eat a smaller meal than needed or had to eat fewer meals in a day rarely or sometimes. Finally, a household was severely food insecure if they had to eat a smaller meal than needed or had to eat fewer meals in a day often, or ever had no food of any kind at home, went to sleep at night hungry because there was not enough food, or went a whole day and night without eating anything because there was not enough food.

Variables

Table 3.1 describes how the variables in the study were measured. After attempting to utilize the log transformation for correcting the skewedness in data was unsuccessful, logistic regression was the appropriate method and was selected to analyze the data. This statistical limitation has resulted in the grouping and dichotomization of some of the variables. More details are provided in the following pages. Food security status was measured using the HFIAS nine occurrence questions and nine frequency of occurrence questions designed to represent increasing severity of food insecurity (Ballard et al. 2011) (Appendix 3).[iii] Validated methods utilize responses to these questions to identify four categories of food insecurity: food secure and

three levels of being food insecure (mildly, moderately, and severely) (Coates et al. 2007). Because nearly all (98%) of the respondents reported being food insecure, the dependent variable food security was collapsed into a dichotomous variable, severely food insecure and moderately food insecure (the term ‘more food secure’ will be used in this paper to describe the latter type of household, though it is recognized that they are not yet food secure). Three variables were used to measure the social networks of persons with whom the household members interacted and from whom they accessed resources - the total number of such persons; relatives network - the number of relatives is used for measuring bonding social capital; and non-relatives network - different types of relationships other than relatives is used for measuring bridging social capital. Respondents were asked to name up to five people with whom they interacted and exchanged resources and the names and relationships were recorded. Based on the responses, network size was coded small for network size involving a total of up to 2 people and high for total of 3-5 people. Similar coding was used for both relatives network and non-relatives network.

Three socio-demographic variables were selected: age, sex, and education. Age was initially grouped into three categories to describe the study population but was later dichotomized before running bivariate and logistic regression analysis. Education was grouped into two categories lower primary (0-7 years of schooling) and upper level (8 years of schooling or more). Regarding socioeconomic factors, four variables reflecting asset ownership were included. The first set of variables measured total cultivated land in acres, including land accessed through rental. Land was grouped into two categories (4 acres or less and 5 acres or more) to compare those having a smaller land size with those having access to more land. The second set of variables measured the amount of livestock owned. The third set of variables measured farm equipment; and the last set of variables measured home possessions. Selected

farm equipment and household possessions are those that are considered valuable and can be used as indicators of relative wealth. An overall index of livestock owned was created and each type of livestock was weighted using standardized livestock units (Chilonda and Otte 2006); the resulting values were dichotomized. An index of the total value of household possessions was calculated using the market value of new items in 2011 (CSRL 2011); these values were then dichotomized. As with asset ownership (livestock units and farm and home possessions), values were grouped to distinguish low and high groups.

Table 3.1. Summary of variable used in the study

Variable Concept	Type	Description
Social Capital	Independent	1. Network Size
		2. Relative network
		3. Non-relative network
Socio-demographics	Independent	1. Age category of household head
		2. Sex of household head
		3. Educational level
Socioeconomics	Independent	1. Total cultivated land in acres
		2. Livestock standardized units
		3. Value of home possessions
Resource Access	Dependent	1. Rented land for farming
		2. Received labor assistance
		3. Borrowed money
		4. Accessed information
Food security	Dependent	1. Food security status

Data analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) software version 21. Descriptive statistics (frequencies, mean, and median) were used to characterize respondents. Chi-square statistics were utilized to assess bivariate relations between food security with, agricultural technical assistance received, social networks, and socio-

demographic and socioeconomic characteristics of household heads. Because the dependent variable (food security) is dichotomous, we utilized binary logistic regression to predict relations between food security and independent variables of interest.

Logistic regression is a form of multivariate regression in which the dependent variable is categorical and the independent variables are continuous or categorical. While bivariate analysis tests associations between two variables, logistic regression involves testing more than one dependent variable simultaneously while taking into account the effect of other variables on the outcomes of interest. Logistic regression was selected in this study after log transformation failed to correct the skewedness of the data, leading to the grouping of the independent and dependent variables into categories. Unlike linear regression that predicts the value of an outcome (Y) from a predictor variable (X_1) or set of predictors (X_n), logistic regression predicts the probability of an outcome (Y) occurring given known values of a predictor. *P* value <0.05 was used to identify statistical significance, as well as a less conservative *p* value <.10 due to a small sample size and the grouping of variables into categories which decreased predicting power (Menard 1995).

Results and discussion

Household general characteristics in Lira district

Table 3.2 and 3.3 summarize respondents' major sources of livelihoods and household characteristics. Multiple response frequencies indicate that agriculture was the main source of livelihoods in the area with the majority (96%) relying on crops, followed by livestock (65%), casual labor (55%), and trade including roadside selling and kiosks (27%). A variety of crops were grown in the area; these include maize (96%), cassava (96%), beans (93%), sweet potatoes (87%), groundnuts (79%), sesame (69%), millet (60%), sunflower (57%), sorghum (55%), soybeans (50%), and cotton (26%). Pigeon peas, rice, and a variety of vegetables were also

grown. Landholdings were moderate, with a mean of 5.25 acres and a median of 4 acres. A majority (69%) of the households have access to 5 acres of cultivable land or less.

Livestock were few in the area; however, most respondents (88%) owned chickens, 82% owned at least a goat, 65% owned at least one cow, but only 13% owned at least one pig and only 6% owned at least one sheep. Assessment of farm equipment and household possessions indicates that 46% of the households have access to an ox plough, 69% owned a bicycle, 66% owned a radio, and 38% owned a mobile phone. The mean age of the respondents was 44 years and the median was 40. Female household heads were more like to be older ($\chi^2 = 6.269$, df = 2, p = .044) compared to their male household heads counterparts. The average household size among the respondents was six persons. Regarding religion, all the respondents were Christians, predominantly Roman Catholics (40%) and Protestants (41%); the rest (19%) were Pentecostals and Seventh Day Adventists. Education was modest, with 69% having upper primary education (8 or more years of schooling) and 31% having lower primary or no formal education (0-7 years of schooling). Separate analysis found that education was higher among younger (80.5%) and middle age (69.6%) household heads ($\chi^2 = 10.462$, df = 2, p = .005) compared to older household heads (55.4%). Female household heads were disproportionately represented among the less educated group and, as expected, had fewer assets compared to their male household head counterparts (Table 3.3).

Table 3.2. Source of livelihood and household heads' characteristics by gender

Household characteristics	Percent			p-value (χ^2)
	Male-headed	Female-headed	Overall	
Source of Livelihood				
Crop/farming	95.5	95.5	95.5	.982
Livestock	65.6	62.6	64.7	.679
Casual labor	34.6	35.8	35.0	.866
Trade (kiosks)	26.6	28.4	27.1	.790
Age of Household Head				.044
20 – 34 years	32.5	16.4	27.6	
35 – 49 years	37.7	43.3	39.4	
50 years and older	29.9	40.3	33.0	
Educational Level				.000
(0-7 years)	10.4	77.6	30.8	
(8 years or more)	89.6	22.4	69.2	
Religion				.423
Catholic	42.2	34.3	39.8	
Protestant	40.3	41.8	40.7	
Other	17.5	23.9	19.5	
N	154	67	221	

Table 3.3. Mean scores for household characteristics by gender

Variable	Means			p-value for ANOVA
	Male-headed	Female-headed	Overall	
Socio-demographic	Years			
Age	42.7	46.6	43.9	.063
Socioeconomic	Acres and standardize units			
Total Cultivated Land	5.6	4.5	5.3	.068
Livestock Units Owned	1.5	1.1	1.4	.019
Value of Home Possessions (UGX 1000)	190	85	158	.000
N	154	67	221	

Factors affecting food insecurity in Lira

Table 3.4 summarizes bivariate relationships for social capital in terms of network, socio-demographic and socioeconomic characteristics of households with food security status. Results indicated 69% of the respondents were severely food insecure, 29% were moderately food insecure, 1% mildly food insecure, and another 1% food secure - consistent with other studies (Obaa 2011; WFP 2013). Because of the high prevalence of food insecurity, respondents were classified in two categories: severely food insecure or moderately food insecure, with the 1% food secure and another 1% mildly food insecure respondents included in the moderately food insecure group -resulted in (69%) labeled as severely food insecure and the rest (31%) as moderately food insecure. Consistent with our hypothesis, we observed a significant association between networks and food security, with households having a larger social network being only moderately food insecure (hereafter referred to as 'more food secure) than households with a smaller social network ($\chi^2 = 6.537$, df = 1, p = .011). Positive associations were also observed between social network size and the number of meals consumed in a household (Appendix 4)[iv] with households having larger network size were more likely to have at least two meals per day (81.5%) compared to those with smaller networks (67.3%) ($\chi^2 = 5.838$, df = 1, p = .016). However, no associations with food security were found when network composition (relatives network and non-relatives network) was considered. As expected, socio-demographic and socioeconomic characteristics of household heads influenced level of food security. We observed that food insecurity increases with age of household head ($\chi^2 = 3.725$, df = 1, p = .054). Male-headed households were more likely to be food secure than female-headed households. Higher educational level was also positively associated with food security ($\chi^2 = 6.612$, df = 2, p = .037). This finding suggests that households with younger/middle-age and male household heads with a

higher education have better food security outcomes than households headed by those who are older, female, or less educated. Household socioeconomic characteristics (land size, livestock ownership, and the value home possessions) were also positively associated with food security; households that own more land (5 acres of more), more livestock, and have a higher value of home possessions were more food secure than households with smaller land size, low levels of livestock, and low value home possessions. The next section further explores these differences and associations between food security, social capital, and socio-demographic and socioeconomic characteristics using binary logistic regression analyses.

Table 3.4. Household characteristics by food security status

Variable	Food Security Status		p-value ($\chi^{2)}$
	% Severely Food Insecure	% Moderately Food Insecure	
Social Network Size			.011
Smaller (0-2 people)	77.0	23.0	
Larger (3-5 people)	61.1	38.9	
Relatives Network			. 457
Smaller (0-2 relatives)	66.7	33.3	
Larger (3-5 relatives)	71.3	28.7	
Non-relatives Network			.691
Smaller (0-2) non-relatives	70.9	29.1	
Larger (3-5) non-relatives	68.3	31.7	
Age of Household Head			.054
Younger (≤40 years)	63.5	36.5	
Older (> 40 years)	75.5	24.5	
Education			.037
Female (all levels of schooling)	80.6	19.4	
Male (0-7 years)	66.4	33.6	
Male (8 more years)	59.1	40.9	
Land Cultivated (acres)			.016
Small (≤4.9 acres)	76.0	24.0	
Large (≥5 acres)	61.0	39.0	
Livestock (standardized units)			.233
Low (≤0.99)	73.3	26.7	
High (1.0 +)	65.8	34.2	
Value of Home Possessions (UGX 1000)			.013
Low (≤170)	45.2	29.9	
High (>170)	54.2	71.1	
N	153	68	

Results of logistic regression

Binary logistic regression was utilized and three logit models were tested and significantly explain the influence of the independent variables (network size, educational level, age, home possessions, and land ownership) on the dependent variable (food security). Model 1 tests the impact of network size, age, and education on food security. Model 2 tests the relationship of network size, age, and value of home possession with food security. Model 3 tests

the relationship of food security with network size, age, and land size. Before performing logistic regression, we conducted a multicollinearity diagnosis. Collinearity is a potential problem in logistic regression that arises from high correlations among independent variables which can lead to biased estimates. Two robust tools for detecting the presence of collinearity are Variance Inflation Factor (VIF) and Tolerance Statistic. According to Menard (1995), a VIF greater than 10 is a cause of concern, a tolerance below 0.1 indicates a serious problem, while a tolerance below 0.2 indicates a potential problem. The test results indicate VIF values are well below 10 and Tolerance values are well above 0.2. Therefore, all variables of interest were used in the analysis.

Factors predicting food security among formerly displaced farm households

Consistent with the hypothesis about association between food security and social capital, we found that households with a larger social network were two times as likely to be more food secure as households with a smaller network (Model 1). In separate bivariate analysis, we observe that social network size was positively associated with the number of meals consumed per day, with households having a larger social network were more likely to consume at least two meals a day compared to households with a smaller network. This suggests that having a larger network may increase a household's ability to leverage resources and, thus, decrease anxiety about food access. Reliance on social capital among households to mitigate risks associated with access to food was also observed during the field research and informal discussions with farmers.

As hypothesized, significant associations were found between food security and demographic and socioeconomic factors. In particular, we found that food security is positively associated with educational level of household head (Model 1), consistent with other studies

(Obaa 2011). Households whose head attained 8 or more years of schooling were 2.4 times as likely to be food secure than households whose head is less educated, with female-headed households disproportionately represented among the less educated group. Within this less educated group, male-headed households were twice more likely to be more food secure than female-headed households, which is consistent with field research observations and consistent with the hypothesis. No associations were found between food security and the age of household head in binary logistic regression analysis (Model 2).

Amount of land significantly predict food security. Not surprisingly, the richer the household, the more likely it was to be food secure. We found that households having 5 acres or more were 1.7 times as likely to be more food secure compared to households having 4.9 acres or less land (Model 3). No significant association was observed between food security and home possessions when networks size and age of household head are controlled for. A probable explanation for this finding is that the value of home possessions assessed in this study covered bicycle, radio, and mobile phone, which are mostly owned by males and can be purchased regardless of food sufficiency in the household - reflecting intra-households relations and males' control over productive assets.

The literature on food security has generally indicated that access to food, rather than its availability, is the main challenge facing poor people in developing countries (Maxwell and Smith 1992; FAO 1996), with poverty being the constraining factor to accessing nutritious food required for healthy life (Flora 2008;WFP 20013). In general, this research supports that assertion. Formerly displaced farm households in Lira district were impoverished by decades of war and have limited resources necessary for accessing food in the market while agricultural production is low. The finding of this study supports other studies with regard to the role of

social capital on household food security (Obaa 2011; Sseguya 2009). Despite the impact of protracted war, social capital is prevalent in Lira and was significantly linked to accessing resources and food. In support of other studies (Lin 2000; Berry 1989), social relations, including power differentials encoded in social and cultural practices, such as gender relationships, mediate access to resources and determine food security among households in Lira.

Causes of food insecurity at the household level are dynamic and complex. Regardless of the strong association observed between food security and social capital, social networks alone are insufficient to address food insecurity in post-conflict situations. Given their reliance on agriculture, achieving sustainable food security in Lira is contingent upon adequate access to and availability of resources that can be put to productive use. In addition to land, access to improved seeds, appropriate fertilizers and pesticides, as well as sufficient knowledge of improved farming practices and technologies are important for increasing production and improving food security. Availability and access to market centers is crucial for households to market or exchange agricultural products for items that they cannot produce themselves. Conflict and cattle raiding have reduced livestock numbers in Lira; therefore, re-stocking livestock would also improve food security, as livestock can be used as financial capital during emergencies. Food insecurity in Lira is a result of inadequate purchasing power; therefore, opportunities for employment during non-farming seasons can help households earn cash to increase food security (Stites et al. 2007). Knowledge of proper nutrition can greatly improve food security, particularly among children in Lira. Finally, food security intervention programs should understand local context and devise mechanisms to reach the most vulnerable populations in order to effectively reduce food insecurity.

Table 3.5. Binary logistic regression of food security with household characteristics

	Independent Variables	Exp (B)	S.E.
Model 1	*Network Size*		
	Large (3-5 people)	2.022**	0.304
	Education Level of Household Head		
	Male (0-7 years)	1.979*	0.375
	Male (8 or more years)	2.407*	0.452
	Age of Household Head		
	≥40 years	0.642	0.313
Model 2	*Network Size*		
	Large (3-5 people)	1.826*	0.313
	Age of Household Head		
	≥40 years	0.625	0.307
	Value of Home Possessions (UGX 1000)		
	High (>180)	1.701	0.334
Model 3	*Network Size*		
	Large (3-5 people)	1.764*	0.317
	Age of Household Head		
	≥40 years	0.559*	0.305
	Land Cultivated (acres)		
	≥5.0 acres	1.764*	0.315

a. The reference category is: 1 severely food insecure
* Significant at p < .10 ** significant at p < .05 *** significant at p < .01

Conclusion

The purpose of this study was to examine possible associations between social capital and food security as well as the impacts of socio-demographic and socioeconomic factors on food security among formerly displaced farm households in post-conflict Lira, northern Uganda. We hypothesized positive associations between food security and bridging and bonding social capital, as well as the influence of socio-demographic and socioeconomic characteristics on food security outcomes. Both quantitative and qualitative (field observation) analyses support the hypotheses regarding relationships between food security and social capital, as well as the contribution of socio-demographic and socioeconomic characteristics of household heads on

access to food. As expected, higher social capital in terms of total network size emerged as the main predictor of better food security (i.e., less food insecure) in the area. However, no significant associations were found between bonding social capital (relatives network) and bridging social capital (non-relatives network) and food security. Bivariate analysis indicates no significant difference in the levels of social capital in terms of network size among households with different characteristics. This was consistent with field research observations in groups that include farmers from diverse socio-demographic and socioeconomic backgrounds, suggesting the need for inclusive and balanced social capital to achieve sustainable livelihoods and safety nets in post-conflict situations where resources are limited and access to social support is crucial. This further suggests that inclusive social capital can be an important mechanism for addressing challenges associated with power differentials encoded in social and cultural relations, such as gender relations that mediate resource access and may determine livelihood outcomes. As expected, human capital in terms of education was positively associated with food security. Households whose head is better educated are more food secure. Male heads of household who have a higher education have households that are more food secure than their female counterparts, who were disproportionately represented among the less educated groups. Therefore, efforts to target female-headed households are important in sustainable food security programs, and adult literacy education that targets females could be helpful in empowering vulnerable groups.

With respect to the role of socioeconomic factors, the amount of land cultivated was positively associated with food security. Given their dependence on subsistence farming, land is the single most important source of livelihood resources and food access among farm households in Lira. Food insecurity in Lira generally results from inadequate resources, particularly money

for purchasing food in local markets. With land being the main productive resource in the area, households with relatively large landholdings that have access to labor may produce more food and rent out part of their land to augment the financial resources necessary for food access. In terms of natural capital, wild greens, roots (cassava roots), and fruit (including mangoes) were also an important form of capital that people rely on during food shortages.

During field research, people (particularly children) were observed foraging for wild greens and unripe mangoes or cassava roots near their homes and around their neighborhoods during the day, even within the relatively wealthier households. This also suggests the need for a better understanding of the implications of cultural capital regarding allocation of food within households and knowledge about nutrition. The Household Food Insecurity Access Scale (HFIAS) which measures access to food may not be sufficient to capture complex and dynamic factors affecting food security in post-conflict situations, including intra-household relations, people's priorities and choices in achieving food security, and using resources to build assets and plan for the future. Theoretically, the recent focus on group-based approaches for development assistance is important because repeated interactions among people can reinforce social capital and cooperation among households. The results of this study suggest that consideration of household' social networks are critical to improving food security. Development intervention programs can improve food security by investing in people and strengthening existing social networks and organizations rather than attempting to replace them with new ones. Reference to social capital and use of the sustainable livelihoods approach are essential for understanding people's strengths and initiatives as well as key livelihood resources and strategies used by households in post-conflict settings. Utilization of both quantitative and qualitative approaches has provided a good understanding of the interrelated factors affecting food security and

livelihoods in Lira. Finally, understanding cultural factors and social relationships that shape resource access and determine livelihood outcomes would be vital for designing programs targeting vulnerable populations rather than assuming homogeneity among households.

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CHAPTER FOUR. SOCIAL CAPITAL AND ACCESS TO LOANS IN POST-CONFLICT LIRA, NORTHERN UGANDA

Manuscript for submission to *Development in Practice*

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Abstract

This study builds on research about the importance of self-help credit associations for understanding the strategies employed by rural households in post-conflict situations to access needed financial capital. The study examines the impact of social capital on accessing loans among formerly displaced farm households in Lira district, northern Uganda. The contribution of socio-demographic and socioeconomic factors on access to loans was also investigated. Data were collected from March-July 2011 through interviews with 221 heads of household, and through field research observations. Consistent with our hypotheses, social capital was strongly associated with loan access and size in post-conflict Lira. Logistic regression analyses revealed the influence of age, sex, and educational level of household heads, as well as the impact of land and livestock ownership on accessing loans. Results of this study can aid the design of appropriate development programs that effectively address challenges associated with access to loans that reflect local conditions and needs, and promote sustainable livelihoods in post-conflict settings.

Keywords: social capital, participation, financial capital, credit, post-conflict, Uganda

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Introduction

Among the leading causes of the persistence of poverty in developing countries is inadequate access to financial capital among the poorest people in rural areas (IFAD 2009; FAO 2013). Households affected by war face additional challenges in accessing extra credit that can be put into productive use to rebuild livelihoods and accumulate assets. Despite widespread recognition of access to appropriate loans as a vital instrument for poverty reduction, smallholder farmers in developing countries continue to be left out of mainstream financial markets, making it difficult for them to access loans to improve agricultural production necessary for improving conditions in post-conflict communities. Poor financial markets in rural areas, information asymmetry, and the inability to provide collateral are the main barriers for smallholders to access loans through formal institutions (Bouman 1995; Basu and Srivastava 2005; IFAD 2009). Where loans from formal financial institutions are available, they may not be appropriate for the conditions of smallholders and lenders may charge high interest rates. Given their dependence on agriculture and lack of crop insurance, smallholders are at risk of losing their asset base (particularly land) to repay loans in the event of crop failure (Robinson 2001). The loss of major assets would then further expose households to chronic poverty. Efforts to reduce rural poverty should address this gap and create an enabling environment for the rural poor to access financial capital to increase agricultural production and develop enterprises that augment their resources and reduce vulnerability (Zeller et al.1997; Flora and Flora 2004).

Literature on rural finance tends to focus on expanding credit to the poor through formal financial institutions or credit intermediaries, while overlooking people's initiatives to pool resources and generate funds (Biggart 2001; Gugerty 2007). Little has been done to date to understand how social capital may contribute to accessing loans and the extent to which self-help

financial associations help households improve conditions and build assets, particularly in post-conflict settings. Utilizing a sustainable livelihoods approach as the conceptual framework, this study aims to fill this gap in the literature by investigating strategies of formerly displaced farming households in Lira, northern Uganda in accessing financial capital. Specifically, the study examines the role of social capital on access to loans. The sustainable livelihoods approach, in which social capital is one of several core components, focuses on people's strengths, priorities, and initiatives to solve their own problems. The approach is of particular relevance to this study. A detailed discussion of social capital and the sustainable livelihoods approach is provided in the sections below. Another aim of this study is to investigate the contribution of socio-demographic (age, gender, and education) and socioeconomic characteristics (land and livestock ownership) on access to credit.

Poor people are innovative and capable of improving their own conditions and can often lift themselves out of poverty if given appropriate support. The widely-cited and recognized microcredit approach, particularly the Grameen Bank model, has demonstrated that appropriate financial services can be an effective tool for reducing poverty among the poorest; women and other types of poor people are credit-worthy and are able to repay loans (Khandker 1998; Dhakal 2004). Microcredit programs are based on group lending in which continuous access to credit is contingent upon timely repayment of prior loans. These services rely on social relations and peer pressure to ensure loan repayment. Despite its popularity, however, there have been concerns about the appropriateness of microcredit approaches in terms of sufficiently meeting the financial needs of the poorest people (Wilson 2001; Khandker 1998). This approach is criticized for shifting responsibility to the poor and creating dependent relationships in which borrowers are pressured and trapped in a cycle of loan repayment (Rahman 1999; Vonderlack and Schreiner

2002; Karim 2008; Stewart et al. 2010) rather than investing in savings or developing financial skills that promote self-sufficiency and asset building (Basu and Srivastava 2005; Ploeg 2010). According to Vonderlack and Schreiner (2002:1), “The recent shift in terminology from microcredit to microfinance reflects the acknowledgment that savings services - and not just loans - can help improve the well-being of the poor.” Unlike microcredit, microfinance programs offer sets of financial services, including loans, savings, financial management skills training, and insurance, primarily for the development of small businesses. Due to pervasive poverty in rural areas, however, microfinance has not sufficiently addressed the financial needs of the poorest people. This is particularly evident in areas characterized by instability, such as post-conflict situations (Stites, Mazurana, and Carlson 2006).

In areas where access to loans through formal institutions is non-existent, the most common alternative among the poor involves the mobilization and pooling of resources. Self-help financial association, including village savings associations and rotating savings and credit associations (ROSCA) are traditional strategies which poor people use in an attempt to meet their own financial needs and mitigate risks (Fafchamps and Pender 1997; IFAD 2009). Although interest in informal financial programs is fairly recent within the development discourse (Besley, Coate and Loury 1994), credit associations are a widespread global phenomenon that has long existed (Bouman 1995; Kimuyu 1999).

In sub-Saharan Africa (SSA), financial markets are generally underdeveloped and access to loans through banks is restricted (Wright 1999; Hendricks and Chidiac 2011). As in other developing countries, microfinance programs in Africa have not reached the poorest in rural areas. Although microfinance programs may help some small businesses, there are growing concerns that they have made other poor people worse off due to charging high interest rates

while the business environment may not be favorable for significant returns on investments (Steward et al. 2010). Given the challenges associated with access to loans, poor people heavily rely on relatives, friends, and their own initiated credit associations (including village savings, rotating savings, and other savings groups) that are widespread in both urban and rural areas in Africa (Bouman 1995; Kimuyu 1999). These associations help address a variety of financial needs and play a crucial role in asset building and improving the well-being of rural households. Participation in self-help associations not only affords easy access to small loans during times of need, but also enables households to protect and increase productive resources and plan for the future (Bastelaer 2000; Swain and Varghese 2009; Zheke 2010; Benda 20013). In recognition of the potential of these associations, CARE, a prominent international development organization, has expanded on and adopted a new model of Village Savings and Loans (VSL) program in several African countries. This program promotes savings and financial training as a more sustainable way to address the gap in accessing financial capital in rural areas and to build assets and avoid the risks of being trapped in debt (Hendricks and Chidiac 2011).

Poor people are not homogeneous. Although self-help financial associations are crucial, the benefits gained from participating in these associations may vary among households. Socio-demographic and socioeconomic characteristics may affect households' access to loans. Research has shown that social factors (e.g., age, gender, and education) and socioeconomic factors (land, asset ownership) mediate access to loans in both formal and informal financial institutions (Berger 1989; Zeller 1994; Vaessen 2001; Ishengoma 2004; Okurut and Schoombee 2007). For example, women in many developing countries have limited control over land and other resources that can be used as collateral and have less education than men, putting them in a disadvantaged situation for leveraging loans and making it difficult for female-headed

households to improve their conditions. Power relations, particularly gender relations that shape access to key resources among social groups, deserves special attention in order to devise sustainable development programs that reach the most vulnerable populations and avoid unintentionally reinforcing inequalities (Longley et al. 2007).

In SSA, Uganda has made substantial progress in reducing poverty and food insecurity. Nationally, poverty declined from 56% in 1992 to 24.5% in 2009/2010 (UNDP 2013; WFP 2013). The Africa Millennium Development Goal (MDG) report in 2013 indicates that Uganda is close to reaching the target of halving the number of people living in extreme poverty and hunger by 2015. Despite significant overall progress, however, poverty remains predominantly a rural phenomenon, with 30% of the rural population living below the national rural poverty line. In Uganda, inadequate access to financial services remains a serious problem, particularly among the poor in rural areas. The Plan for Modernization of Agriculture (a major component of the Uganda Poverty Eradication Plan) aimed to improve conditions among smallholders by enhancing resources, including creating an enabling environment for access to financial capital in order to increase agricultural production (MFPED 2001). These interventions, however, have not achieved a significant impact and restricted access to financial capital continues to impede efforts to reduce poverty in the country (Okurut and Schoombee 2007; Mpuga 2010) particularly in rural areas where most (86%) of the population lives and poverty prevails (UNDP 2013).

Microfinance programs in Uganda have not reached the poorest people and credit services are limited to the few who meet collateral requirement for loans (usually those in urban areas) (USAID 2007; Okurut and Schoombee 2007). According to the World Bank (2009), 62% of Ugandans are unable to access loans from any source (formal or informal). As in other countries in SSA, the traditional sources of loans for the rural poor in Uganda have been through

relatives, friends, local moneylenders, and informal financial programs, including group savings, which are prevalent in Uganda (USAID 2007; Mpuga 2010; Obaa 2011). In northern Uganda where two decades of devastating conflict have damaged the economy and community institutions, returning rural households face serious challenges in accessing the loans necessary for agricultural revitalization and asset building (Stites et al. 2006; USAID 2007; Obaa 2011). Financial capital is central for livelihood diversification and can be readily transformed into other capitals (Ellis 1998; Flora and Flora 2004). In post-conflict situations, access to appropriate loans that can be used for the timely purchase of agricultural inputs and to start small businesses is important for transitioning from emergency-based assistance to long-term development.

A common feature of conflict-affected communities is a dramatic demographic shift toward female-headed households because of high mortality among adult males engaged in or targeted during war (Zuckerman and Green 2004; Edward 2007). For example, 24% of the returning IDPs in northern Uganda lived in female-headed households (IDMC 2010). Given the entrenched cultural bias against women in terms of control over resources such as land and other property that can be used as collateral for loans complicated by limited education, female-headed households may face problems in accessing loans and thus are especially vulnerable to chronic poverty. In most developing countries including Uganda, women produce mostly for household consumption and are charged with taking care of their family. Thus, access to appropriate loans is not only an effective way to improve well-being of the households but also a way to empower women economically, socially, and politically (IFAD 2009).

Because about one-quarter (24%) of returned households in Lira are female-headed households, the influence of gender on accessing loans is examined in this study by comparing male and female-headed households in terms of access to resources and financial capital. The

research was carried out within the context of a post-conflict food security project implemented during 2008-2011 by Volunteer Efforts for Development Concerns (VEDCO), an indigenous non-profit development organization (NGO), in partnership with Agricultural Cooperative Development International/ Volunteers in Overseas Cooperative Assistance (ACDI/VOCA) in Lira district.

We addressed the following questions: (1) What role does social capital play in obtaining loans? (2) How do bonding and bridging social capital affect access to loans? and (3) How do socio-demographic and socioeconomic characteristics of household heads affect access to loans? By addressing these questions, this study can advance our understanding of strategies used by households to address challenges associated with inadequate access to loans. It can therefore guide poverty reduction policies and the design of rural development programs to provide appropriate/sustainable financial access to rural households, especially in post-conflict settings. Collecting and analyzing information regarding peoples' initiatives to help themselves in post-conflict situations requires a holistic and people-centered approach that recognizes people's strategies to address dynamic/complex livelihoods in post-conflict settings.

Conceptual Framework

Post-conflict reconstruction presents challenges to governmental and humanitarian organizations because economies and physical infrastructure are destroyed and social institutions are weakened during the war. In post-conflict situations where assets are destroyed or lost, the most important resources that can be put to productive use are those embedded within people, including social and human capital (Mazur 2004). These important resources can be enhanced and combined with other assets in a manner that promotes sustainable livelihoods and long-term

development in post-conflict situations. Sustainable livelihoods have multiple definitions. According to Scoones (1998:5):

> A livelihood is comprised of assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base.

An alternative definition highlighting issues associated with elements of vulnerability (ownership, access, constraints, and decision making) is offered by Singh et al. (1994: 3) which defines sustainable livelihoods as:

> People's capacities to generate and maintain their means of living, enhance their well-being and that of future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, socio-cultural, economic and political and are predicated on equity, ownership of resources and participatory decision making.

These definitions suggest that understanding and recognizing people's resourcefulness and initiative to overcome constraints is central to the livelihoods approach (Butler and Mazur 2007), and can be the starting point for effective development assistance. In distressed circumstances, such as in post-conflict situations, a sustainable livelihoods approach can be helpful for making connections among various intervening factors that may constrain or enhance livelihoods so that effective interventions can be devised (De Satge and Holloway 2002).

Core livelihood resources consist of human capital (knowledge and skills, good health and capacity to perform labor, education, leadership and information), social capital (networks, organization, and membership), physical capital (roads, farm implements, and livestock), natural

capital (land and water, perennial plants), and financial capital (money, savings, remittances, and credit). Financial capital is not limited to cash but includes other assets that can be used to store value such as livestock. Flora and Flora (2004:165) define financial capital as "resources that are translated into monetary instruments that make them highly liquid, that is able to be converted into other assets." In this study, financial capital refers to loans that households accessed. Household expenditures on personal and households needs are also considered in analyzing levels of access or possession of financial capital (Kimuyu 1999) in this study.

Like other concepts, the sustainable livelihoods approach has limitations. Murray (2001) points out that the approach underplays factors contributing to vulnerability, including macro-economic trends, conflict, and inequalities among social groups. On the other hand, Flora and Flora (2004) suggest that this limitation can be addressed by the Community Capitals Framework (CCF), which incorporates political capital (the ability to affect rules and policies that determine access to resources) and cultural capital (values and customs that shape people's worldviews), in addition to the five capitals in the original sustainable livelihoods approach. According to Flora (2007:2), "consideration of the seven capitals is critical in making sure that programs are both sustainable and effective." Characterized by a lack of sufficient assets, poorer households heavily rely on their social relations involving kin, friends, and neighbors for resource access.

Social capital and its link to credit and other resources

Social capital has gained wide attention among scholars and development practitioners in recent decades. Bourdieu (1986:248-249) defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." Bourdieu conceives of

social capital at the individual level as emphasizing benefits that individuals derive from membership in a group as their motivation to engage in social networks. He argues that the volume of social capital that individuals possess is contingent upon the size of the network and the volume of capital (economic, cultural or symbolic) accruing to individuals as a result of engagement in the network. Other scholars conceive of social capital at the community level. For example, Putnam (1993:35-36) refers to social capital as "features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit." Flora and Flora (2008:117) describe the concept as an "attribute of communities, which is more than the summing up of individual social capital." Therefore, social capital can be described as an emergent quality of group or community interactions. Coleman (1988:98) states that "like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence." Poor people can utilize their social relations and engage in collective action such as credit associations to achieve mutually beneficial goals while reinforcing norms of trust that facilitate cooperation (Flora and Flora 2008).

Regardless of different conceptualizations and levels of analysis, scholars view social capital as a resource embedded in social relations and interactions that facilitate collective action. In poor rural areas, participation in credit associations is crucial for accessing loans and enhancing other capitals. In situations where access to financial services is restricted or non-existent, social networks become important for addressing the gap in financial services and accessing credit in developing countries (Bastelaer 2000; Zheke 2010; Benda 2013).

Recognition of the role social capital in development has attracted greater interest among scholars and development specialists. Building and enhancing social capital by organizing and supporting farmer groups has been increasingly used for implementing agricultural technical

assistance programs in developing countries (Uphoff 2000; Narayan 2002). Despite the popularity of the concept, measuring social capital is a subject of debate, though a considerable body of work utilizes social networks to measure social capital. Knoke and Yang (2008:8) define a social network as "a structure composed of a set of actors, some of whose members are connected by a set of one or more relations." Central to social network analysis is relations and actors, with relation describing a specific kind of tie between actors (Knoke and Young 2008). Actors can be individual or groups (formal and informal). Social network analysis seeks to understand bonds among actors and their implication in terms of resource exchanges (Wassermen 2005). Lin (1999) states that social capital has its roots in social networks, and should therefore be measured in relation to its roots. Other scholars use or advocate for the use of membership in networks as a proxy for measuring social capital (Burt 1997; Portes 1998; Krishna and Uphoff 1999; Narayan and Prichett 1999; Flap 2004). Given that social capital can be conceptualized at different levels, its measurement can be tailored to the unit of analysis used (Grootaert and Bastelaer 2001). In this study, the household is used as the unit of analysis; therefore, we conceptualize social capital at the household level, and drawing from the literature, we define social capital as a social network that has the potential to provide opportunities for leveraging resources.

Two types of social capital have been distinguished. Bridging social capital describes connections within diverse groups and connections with outside groups (Flora and Flora 2008). Bonding social capital refers to connections that exist within groups of similar background or interests including gender, ethnicity, kinship, and education. The balance of both bridging and bonding social capital is important for effective community development, particularly in post-conflict people can reinforce norms of trust and inclusive network within their communities

while expanding their networks to leverage resources from other communities or organizations (Flora and Flora 2008). Key dimensions of social networks are size and composition. Network size refers to the total number of connections while network composition refers to different types of connections, such as those with relatives, friends or organizations. In this study, relatives network and non-relatives network represent bonding social capital and bridging social capital, respectively. Our hypotheses are as follows: (1) household heads having larger network size have greater access to credit/loans; (2) household heads having a larger non-relative networks have more access to credit than households having a larger relative network; (3) Households whose head is younger or middle-age, male, and more educated have greater access to loans; and (4) households having a larger land size and owning more livestock have greater access to loans.

Study area and methods

Study area

As stated earlier, the objective of this research is to investigate impacts of external support and factors affecting access to resources in a post-conflict setting. Recovering from a civil war and with many formerly displaced households returning home from camps and receiving agricultural technical assistance, Lira district is very appropriate for this study.

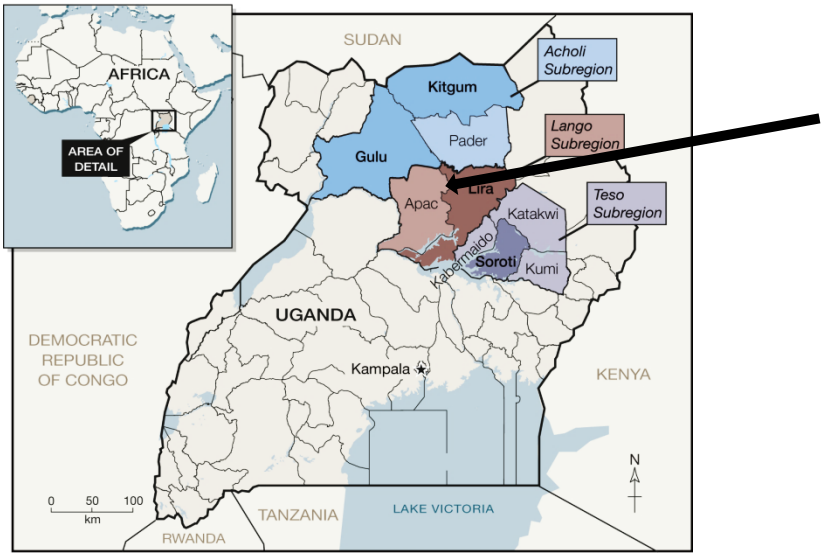
Lira is one of the five northern districts of Uganda and its capital Lira town is 352 km from the national capital Kampala. It is bordered by the districts of Pader and Otuke in the north and northeast, Alebtong in the east, Dokolo in the south and Apac in the west (Figure 1). The district lies at 975m to 1,146m above sea level. Its coordinates are: 02 20N, 33 06E (Latitude: 02.3333; Longitude: 33.1000). It is characterized by a continental climate, with two peak rainy seasons, April-May and August-October. The average annual rainfall is 1000 -1500mm.

According to the National Census (2002), the district has a population of 757,763 (50.7% female). As of 2005, three counties (Otuke, Erute, Moroto) comprise the district and there are 18 sub-counties, 123 parishes and 1,546 villages (Uganda District Information Handbook 2005). The soil is mainly sandy loam, which covers most of the district. Agriculture is the main economic activity, with the majority (86%) living in rural areas and dependent on subsistence farming for their livelihoods (UNDP 2007). Millet and sorghum, maize, sweet potatoes, cassava, peas, beans, sesame, groundnuts, and various vegetables are grown in the area. Cattle herding had been an important livelihood activity and indicator of wealth before the war, but cattle rustling in the late 1980s and the rebel insurgency drastically reduced the livestock population in the district (Oxfam 2008). Other livestock reared in the district include chickens, pigs, and goats.

This study was conducted with former internally-displaced households that were participating in a three-year food security project implemented by VEDCO in two parishes of Apalla sub-county (Okwongole and Obin), two parishes of Aromo sub-county (Arwot-omito and Apuce), three parishes of Ogur sub-county (Akano, Adwoa and Akangi), and three parishes of Amach sub-county (Adyaka, Ayach and Banya). The last three parishes of Amach sub-county were incorporated in the project at the end of 2010. The overall goal of the project was to enhance the capacity of small-scale farmers to increase food production and utilization, improve sanitation, and develop agricultural marketing skills among 7,000 small-scale farmers in 4,200 households. This was accomplished through provision of agricultural extension services and training in various components, including agronomic practices, natural resource management, post-harvest crop handling techniques, business skills, nutrition, preparation and consumption of a balanced diet, and development of farmer organizations. Extension services were provided to self-selected groups with members of each group ranging from 24-30 farmers, as required by the

project. Each group writes its own constitution which guides its activities is required for registering the group with the local government administration. Included in the constitution are the group's purpose, criteria for membership, code of conduct for members, procedures for electing the group leadership, meeting dates/times, and membership contributions.

Figure 4.1. Map of Uganda showing the location of Lira District



Source: Food and Agricultural Organization of the United Nation
http://www.fao.org/docrep/005/ac912e/ac912e03.htm

Population and sampling

A systematic stratified random sampling strategy was used in this study. To gain broader insights into household activities and project impacts, we included in the study all four sub-counties and parishes in each sub-county where the project operated. Project activities were organized with parishes as the administrative units; therefore, parishes were used in this study for selecting the sample. To begin the sampling selection, lists of participating households were updated using group training attendance lists. With the help of project extension staff and the

community based trainers (CBTs), names of households that were no longer participating in the project were excluded from the sampling frame. Systematic random sampling was used to select 180 male-headed households out of 3710 participating male-headed households. Proportional sampling was utilized to draw samples from farmer groups in the parishes. Using similar methods, 60 female-headed households were randomly selected out of 341 participating female-headed households representing all parishes except for three parishes (Adyaka, Ayach, and Banya) of Amach sub-county. These parishes were excluded because they were incorporated in the project late with no special consideration for female-headed households as in the other parishes. We found out later during the interview that seven of the 180 male-headed households sampled were female-headed and were included in the sample. Female-headed households were included to examine the influence of sex of household heads on resource access.

Data collection

This study used quantitative and qualitative methods. A structured questionnaire was utilized to collect quantitative information on (a) membership and level of participation in group activities by household heads or their spouses, (b) leadership in groups, and (c) means of access to credit. Information was also collected on selected assets as well as demographic and socioeconomic characteristics (age, sex, and education) to examine social factors that may shape credit. Qualitative information was collected through direct observations and informal discussions with farmers as well as attending and observing group savings activities which were conducted every Monday.

Two research assistants with experience in data collection were involved in the data collection process between March and July 2011. The interviews were conducted in the local language (Luo) and were carried out in a variety of settings, including respondents' homes,

farms, church centers, market centers, and meeting places as preferred by the respondents. Out of the 240 households sampled, interviews were completed with 92% (221 total, 154 male-headed and 67 female-headed); 19 (16 males and one female) were not available for interviews. Two respondents (male) were dropped due to incomplete information.

Variables

Table 4.1 presents the variables used in the study. After attempting to utilize the log transformation for correcting the skewedness in data was unsuccessful, logistic regression was the appropriate method was selected to analyze the data. This statistical limitation has resulted in the grouping and dichotomization of some of the variables. More details are provided in the following pages. Three variables were used to measure the social networks of persons with whom the household members interacted and from whom they accessed resources, the total number of such persons; relatives network, the number of relatives is used for measuring bonding social capital; and non-relatives network, different types of relationships other than relatives is used for measuring bridging social capital. Respondents were asked to name up to five people with whom they interacted and exchanged resources. The names and relationships were recorded and then recoded into relatives and non-relatives networks. Based on the responses, network size was created and coded small for a network size involving a total of up to 2 people and large for a total of 3-5 people. Similar coding was used for both relatives network and non-relatives network.

Three socio-demographic variables were selected: age, sex, and education. Due to modest sample size and skewedness of the data, age was grouped into three categories to compare younger (20-34 years), middle-age (35-49 years), and the older household heads (50 years or older). Similarly, education was grouped into two categories (0-7 years of schooling and 8 years

or more schooling). Regarding socioeconomic factors, two variables reflecting asset ownership were included. The first variable measured total cultivated land in acres, including land accessed through renting. Land was grouped into two categories to compare those having an average land size with those having more land. The second variable measured the amount of livestock owned. An overall index of livestock owned was created and the number of each type of livestock was weighted using standardized livestock units (Chilonda and Otte 2006); the resulting values were dichotomized due to data skewedness to distinguish lower and higher amount groups. Financial capital (loan accessed) is measured by the total amount of money borrowed in the past 12 months; it was grouped into two categories (those who have borrowed more money vs. those who have borrowed less money/negligible amount or none). Household expenditure is measured by the total amount of money spent on household needs, including food, clothing, hospital and school fees, housing repairs, transportation, and other needs in the past month and were grouped into three equal categories. The last three variables measured sources from which households borrowed money in the last 12 months.

Table 4.1. Summary of variables used in the study

Variable Concept	Description and code
Social capital	1. Total network size
	2. Relative network
	3. Non-relative network
Socio-demographics	1. Age category of household head
	2. Sex of household head
	3. Educational level
Socioeconomics	1. Total cultivated land in acres
	2. Livestock standardized units
Loan size	1. Total loan amount accessed in the past 12 months
Personal and household expenditure	1. Total amount spent on personal and household needs
Source of credit	1. Borrowed amount from relative
	2. Borrowed amount from non-relative
	3. Borrowed amount from group

Data analysis

Descriptive statistics (frequencies, mean, and median) were used to characterize respondents. Bivariate analysis (chi-square) was used to determine if any relationships exist between social networks, socio-demographic, and socioeconomic factors (land and livestock) with loans accessed and household expenditures. Multivariate logistic regression was used to predict relationships between social networks, socio-demographic, and socioeconomic factors, with loans and household expenditures among households as indicated by statistics.

Logistic regression is a form of multivariate regression in which the dependent variable is categorical and the independent variables are continuous or categorical. While bivariate analysis tests associations between two variables, logistic regression involves testing more than one dependent variable simultaneously while taking into account the effect of other variables on the outcomes of interest. Logistic regression was selected in this study after log transformation failed to correct the skewedness of the data leading to the grouping of the independent and dependent variables into categories. Unlike linear regression that predicts the value of an outcome (Y) from a predictor variable (X_1) or set of predictors (X_n), logistic regression predicts the probability of an outcome (Y) occurring given known values of a predictor. *P* value <0.05 was used to identify statistical significance, as well as a less conservative *p* value <.10 due to the small sample size and grouping of variables into categories, which decreases predicting power (Menard 1995).

Results and discussion

Household characteristics in Lira, northern Uganda

Tables 4.2 and 4.3 summarize respondent characteristics. Multiple response frequencies indicate that agriculture was the primary source of livelihoods in the area, with the majority (96%) relying on crops, supplemented by livestock (65%), casual labor (35%), and trade including roadside selling and kiosks (27%). A variety of crops were grown in the area, including maize (96%), cassava (96%), beans (93%), sweet potatoes (87%), groundnuts (79%), sesame (69%), millet (60%), sunflower (57%), sorghum (55%), soybeans (50%), and cotton (26%). Pigeon peas, rice, and a variety of vegetables were also grown. Landholdings were relatively modest, with a mean of 5.25 acres and a median of 4 acres.

Livestock were few in the area, though most respondents (88%) owned chickens, 82% owned at least a goat, 65% owned at least one cow, but only 13% owned at least one pig and only 6% owned at least one sheep. Assessment of farm equipment and household possessions indicates that 46% of the households have access to an ox plough, 69% owned a bicycle, 66% owned a radio, and 38% owned a mobile phone. The mean age of the respondents was 44 years and the median was 40. Female household heads were more likely to be older ($\chi^2 = 6.269$, df = 2, p = .044) compared to their male household head counterparts. Multiple response frequencies indicate that 42% of the female-headed households have at least one adult male member residing in the household. The average household size was six persons. Regarding religion, all the respondents were Christians, predominantly Roman Catholics (40%) and Protestant 41%); while the rest (19%) were Pentecostals or Seventh Day Adventists. Education was generally low, and with about one-third (31%) having lower primary or no formal education (0-7 years of schooling) and (69%) have upper primary education (8 or more years of schooling). Female

household heads were disproportionately represented among the less educated group, and as expected have fewer assets compared to their male household heads counterparts (Table 4.3).

Table 4.2. Sex of household head by source of livelihoods and characteristics

Household characteristics	Percent			p-value (χ^2)
	Male-headed	Female-headed	Overall	
Source of Livelihood				
Crop/farming	95.5	95.5	95.5	.982
Livestock	65.6	62.6	64.7	.679
Casual labor	34.6	35.8	35.0	.866
Trade (kiosks)	26.6	28.4	27.1	.790
Age of Household Head				.044
20 – 34 years	32.5	16.4	27.6	
35 – 49 years	37.7	43.3	39.4	
50 years and older	29.9	40.3	33.0	
Educational Level				.000
(0-7 years)	10.4	77.6	30.8	
(8 or more years)	89.6	22.4	69.2	
Religion				.423
Catholic	42.2	34.3	39.8	
Protestant	40.3	41.8	40.7	
Other	17.5	23.9	19.5	
N	154	67	221	

Table 4.3. Household resources and characteristics by gender

Variable	Means			p-value for ANOVA
	Male-headed	Female-headed	Overall	
Loans and Expenditures	(UGX 1000)			
Loan Size	42.9	16.0	34.8	.012
Food Expenditures in Past Week	19.8	18.7	19.5	.663
Personal Expenditures in the Past Month	128.9	112.3	123.8	.504
Socio-demographic	Years			
Age of Household Head	42.7	46.6	43.9	.063
Socio-economic	Acres and Standardized units			
Total Cultivated Land	5.6	4.5	5.3	.068
Livestock Units Owned	1.5	1.1	1.4	.019
N	154	67	221	

Access to financial capital among formerly-displaced households in Lira

Accessing loans through formal institutions/banks was rare in Lira (only two farmers out of 221 reported accessing loans through banks); thus, most households relied on their relatives, friends, neighbors, and group savings for small loans. All participants in this study were from the Langi ethnic group that is predominant in the district. Given limited mobility among farm households, most network ties are built among relatives/kin, neighbors, and friends within the local area. Participation in the project has reinforced social capital, engendered new cooperation, and promoted the exchange of resources among farmers. Unlike in a rotating savings association, groups in Lira accumulate their savings and members can take out loans at the interest rate set by the members themselves. Repayment of loans can be on an installment basis as determined by the members. Groups also raise and set aside money in a 'Welfare Fund' for emergencies such as meeting funeral costs or paying for health care costs without requiring repayment. Sources of the Welfare Funds include fines of members who arrive late for activities and by hiring out labor as a group. Members divide their money at the end of the year, especially in December to celebrate Christmas and the New Year. Saving is prevalent in Lira and Mondays are devoted only to group saving activities in all areas, where members bring their contributions and review their account activities and for members to physically see the money. VEDCO encouraged group savings but had no direct role in saving activities; however, farmers were required to report their savings to the field office each month. The prevalence of group saving activities in Lira is probably because of the lack of other means for accessing loans which is crucial for rebuilding livelihoods and assets in post-conflict communities. Although the contributions seem small, it makes a big difference in the lives of the farmers. For example, one group was able to generate an equivalent

of $1500 in three years. This money was then matched by another organization and the group bought a grinding mill which they used as an investment in their village.

Due to the seemingly high need in post-conflict settings, most (76%) of the respondents reported borrowing money in the past 12 months. Of these, 49% accessed small loans through their group savings, 39.1% of total loans were taken from group savings, indicating the importance of resource pooling; 28% reported borrowing money from friends, and 24% from relatives. While asking for a loan may indicate failure in some cultures, there was no indication of any social stigma associated with borrowing among households in Lira. Another source of access to money was through remittances, with 30% of respondents receiving remittances in the past 12 months, primarily from relatives. Consistent with other studies (Mpuga 2004; USAID 2007; Benda 2012), the major reasons reported for borrowing money include hiring of labor to help with farm work, paying for debts, children's school fees, hospital bills, and to purchase food.

In Lira, livestock represent an important form of financial capital and buffer against shocks. We asked respondents about different options and strategies they pursue when faced with major crises such as sickness, a death in the family, or other major incidents that require financial capital. Frequency results indicate that 61% of the respondents sold livestock to deal with crises in the past 12 months. This finding was supported by field research observations in which traders were observed soliciting eliciting and buying livestock in the villages. During one of the stakeholder forums organized by VEDCO, concerns were raised about farmers selling livestock which they received from another organization instead of keeping them. Other options to deal with crises include borrowing money from peers (16%), using personal savings (8%), and other sources including crop sales (34%).

Factors associated with access to credit among farm households in Lira

Tables (4.4 - 4.11) summarize bivariate relationships between social capital and socio-demographic and socioeconomic characteristics of households, with access to loans. Concerning our hypothesis about associations between access to loans and social capital, results indicate that households having a larger network size were more likely to have a larger total loan amount (χ^2 = 12.675, df = 1, p = .000) and spent a larger amount of money on personal and household needs in the past month (Table 4.4). Similarly, household heads having a larger non-relative network (bridging social capital) were more likely to have a larger loan and more likely to spend a larger amount of money on personal and household needs. (Table 4.5) However, no significant associations were observed between relative networks (bonding social capital) and total loans taken or expenditures on personal and household needs (Table 4.6). As expected, results indicate associations between socio-demographic and socioeconomic factors on access to loans. We found that households whose heads were middle-age (35-49 years) or older (50 years or more) tend to have a larger loan size, though the difference was not significant. However, younger (20-34 years) household heads were more likely to access loans through non-relative networks (Table 4.7). That is probably because younger people have more mobility which was consistent with field research observations. Consistent with the hypothesis, male and more-educated household heads were more likely to have a larger total loan and were more likely to access loans through non-relative networks (Table 4.8) and (Table 4.9) compared to female household heads. More-educated household heads were more likely to spend a large amount of money on personal and household needs.

Regarding the impact of socio-economic characteristics (land and livestock ownership) on loans, results indicate that households possessing larger landholdings were more likely to

access a larger total loan, spend a large amount of money on personal and household needs, and were more likely to access loans from group savings (Table 4.10). Households owning more livestock spent a larger amount of money on personal and household needs (Table 4.11). In general, the results of bivariate analyses are consistent with other studies on self-help financial associations in developing countries (Zeller 1994; Ishengoma 2004; USAID 2007; Okurut and Schoombee 2007), suggesting that post-conflict farm households utilize their social relations and pool resources to improve conditions and mitigate risks despite the impacts of conflict on social structures. In a separate analysis, we observed that social capital (network size, relatives network, and non-relative network) and land ownership were positively associated with borrowing from group savings. In the next section, we further explore the associations between financial capital and household characteristics using multinomial logistic regression.

Table 4.4. Loan size and expenditures by social network size (UGX 1000)

Dependent Variable	Network Size		Overall	p-value (χ^2)
	(0-2 people)	(3-5 people)		
Size of Loans Accessed in the Past Month (%)				
Small (≤ 15)	69.9	43.3	58.4	.000
Large (20+)	30.1	53.7	41.6	
Total Expenditure of Household in Past Month (%)				.000
Small (≤ 51.0)	42.2	21.3	33.0	
Medium (52.0-122.0)	34.5	31.5	33.0	
Large (123.0+)	21.2	47.2	33.9	
N	113	108	221	

Table 4.5. Loan size and expenditures by non-relatives network (UGX 1000)

Dependent variable	Non-relatives Network		Overall	p-value (χ^2)
	(0-2) friends	(3-5) friends		
Size of Loans Accessed in the Past 12 Months (%)				
Small (≤ 15)	81.0	45.8	58.4	.000
Large (20+)	19.0	54.2	41.6	
Total Expenditures of Household in Past Month (%)				.087
Small (≤51.0)	41.8	28.2	33.0	
Medium (52.0 -122.0)	31.6	33.8	33.0	
Large (123.0+)	26.6	38.0	33.9	
N	79	142	221	

Table 4.6. Loan size and expenditures by relatives network (UGX 1000)

Dependent Variable	Relatives Network		Overall	p-value (χ^2)
	(0-2) friends	(3-5) friends		
Size of Loans Accessed in the Past 12 Months (%)				
Small (≤ 15)	54.5	61.5	58.4	.299
Large (20+)	45.5	38.5	41.6	
Total Expenditures of Household in Past Month (%)				.136
Small (≤51.0)	38.4	28.7	33.0	
Medium (52.0 -122.0)	34.3	32.2	33.0	
Large (123.0+)	27.3	39.3	33.9	
N	99	122	221	

Table 4.7. Loan size, expenditures, and sources of loans by age of household head (UGX 1000)

Dependent Variable	Age of Household Head			Overall	p-value (χ^2)
	(20-34)	(35-49)	(50+)		
Size of Loans in the Past 12 Months (%)					.368
Small (≤ 15)	65.6	54.0	57.5	58.4	
Large (20+)	34.4	46.0	42.5	41.6	
Total Expenditures in Past Month (%)					.481
Small (≤51.0)	27.9	29.9	41.1	33.0	
Medium (52.0 -122.0)	39.3	31.0	30.1	33.0	
Large (123.0+)	32.8	39.1	28.8	33.9	
Sources of Credit in the Past 12 Months (%)					
Borrowed money from relatives	18.0	19.5	26.0	21.3	.629
Borrowed money from non-relatives	27.9	17.2	5.5	16.3	.002
Borrowed money from group	45.9	52.9	46.9	48.9	.467
N	61	87	73	221	

Table 4.8. Loan size, expenditures, and sources of loans by sex of household head (UGX 1000)

Dependent Variable	Sex of Household Head		Overall	p-value (χ^2)
	Male	Female		
Size of Loans in the Past 12 Months (%)				.041
Small (≤ 15)	53.9	68.7	58.4	
Large (20+)	46.1	31.3	41.6	
Total Expenditures in Past Month (%)				.481
Small (≤51.0)	31.2	37.3	33.0	
Medium (52.0 -122.0)	32.5	34.3	33.0	
Large (123.0+)	36.4	28.4	33.9	
Sources of Credit in the Past 12 Months (%)				
Borrowed money from relative	22.1	19.4	21.3	.655
Borrowed money from non-relatives	20.1	7.5	16.3	.019
Borrowed money from group	48.7	49.3	48.9	.940
N	154	67	221	

Table 4.9. Loan size, expenditures, and sources of loans by educational level of household head (UGX 1000)

Dependent Variable	Educational Level of Household Head		Overall	p-value (χ^2)
	(0-7 years)	(8 or years)		
Size of Loans Accessed in the Past 12 Months (%)				.002
Small (≤ 15)	73.5	51.6	58.4	
Large (20+)	26.5	48.4	41.6	
Total Expenditures in Mast Month (%)				.033
Small (≤ 51.0)	44.1	28.1	33.0	
Medium (52.0 -122.0)	32.4	33.3	33.0	
Large (123.0+)	23.5	38.6	33.9	
Sources of Credit in the Past 12 Months (%)				
Borrowed money from relatives	26.5	19.0	21.3	.208
Borrowed money from non-relatives	5.9	20.9	16.3	.005
Borrowed money from group	41.2	52.3	48.9	.127
N	68	153	221	

Table 4.10. Loan size, expenditures, and sources of loans by land size (UGX 1000)

Dependent Variable	Land Cultivated		Overall	p-value (χ^2)
	(≤ 4 acres)	(≥ 5 acres)		
Size of Loans Accessed in the Past 12 Months (%)				.081
Small (≤ 15)	63.6	52.0	58.4	
Large (20+)	36.4	48.0	41.6	
Total Expenditures in Past Month (%)				.000
Small (≤51.0)	42.1	22.0	33.0	
Medium (52.0 -122.0)	35.5	30.0	33.0	
Large (123.0+)	22.3	48.0	33.9	
Sources of Credit in the Past 12 Months (%)				
Borrowed money from relatives	21.5	21.0	21.3	.930
Borrowed money from non-relatives	15.7	17.0	16.3	.795
Borrowed money from group	43.0	56.0	48.9	.054
N	121	100	221	

Table 4.11. Loan size, expenditures, and sources of loans by livestock units

Dependent Variable	Livestock Standardized Units		Overall	p-value (χ^2)
	(≤0.99)	(1.0 +)		
Size of Loans Accessed in the Past 12 Months (%)				.592
Small (≤ 15)	56.4	60.0	58.4	
Large (20+)	43.6	40.0	41.6	
Total Expenditures in Past Month (%)				.005
Small (≤51.0)	37.6	29.2	33.0	
Medium (52.0 -122.0)	39.6	27.5	33.0	
Large (123.0+)	22.8	43.3	33.9	
Sources of Credit in the Past 12 Months (%)				
Borrowed money from relatives	21.8	20.8	21.3	.864
Borrowed money from non-relatives	15.8	16.7	16.3	.869
Borrowed money from group	50.5	47.5	48.9	.657
N	101	120	221	

Results of logistic regression

Four logit models were tested and significantly predict the influence of the independent variables, social capital (network size and non-relative network) and socio-demographic and socio-economic factors, on the dependent variables: loans and expenditures on food and personal/household needs. Model 1 tests the impact of total network size, sex, and educational level of household heads on total loans accessed in the past 12 months. Model 2 tests the impact of non-relative networks and land size on loans accessed. Model 3 tests the relationship between network size and educational level of household heads on expenditures for personal and household needs in the past month, and Model 4 tests the impact of non-relative networks, land and livestock ownership, and expenditures for personal and household needs. Before performing logistic regression, we conducted a multi-collinearity diagnosis. Collinearity is a potential problem in logistic regression that arises from high correlations among independent variables

which can lead to biased estimates. Two robust tools for detecting the presence of collinearity are Variance Inflation Factor (VIF) and Tolerance Statistics According to Menard (1995), a VIF greater than 10 is a cause for concern, a tolerance below 0.1 indicates a serious problem, while a tolerance below 0.2 indicates a potential problem. The test results indicate VIF values are well below 10 and Tolerance values are well above 0.2. Therefore, all variables of interest were used in the analysis.

Factors predicting access to loans and household expenditures in Lira

As hypothesized, results indicate that household heads with a larger network size were two times as likely to have a larger total loan (Model 1), and four times as likely to have larger expenditures (Model 3). Similarly, large non-relative networks (bridging social capital) were four times as likely to have a large total loan accessed in the past 12 months. However, no significant associations were found between non-relative networks and expenditure. A probable explanation for this finding is that households may seek loans from friends and group savings during times of need, while meeting their food consumption and household needs without seeking loans, which also suggests that loans are taken to meet important needs.

Concerning the impact of socio-demographic characteristics, results indicate that household heads who attained eight years of schooling or more were two times more likely to have a larger total loan accessed (Model 1) and larger personal and household expenditures compared to household heads with no or lower levels of education (Model 3), which is consistent with the hypothesis. Regarding the contribution of socioeconomic factors, total land accessed predicts a high expenditures and livestock ownership significantly predicts a large total loan and household expenditures. We found that households having five acres of land or more

were more three times as likely to have a larger expenditure (Model 4). Significant positive associations were observed between livestock ownership household expenditure (Model 4).

In general, the findings of this study are consistent with other studies on self-help credit associations in Africa and developing countries (Bastelaer 2000; Zheke 2010; Benda 20013). Poor people pool their resources to generate funds to address a wide range of needs, including paying for health care, school fees for children, and to meet basic needs such as food and clothing. In post-conflict settings where resources are limited, resource pooling becomes an important livelihood strategy to reduce vulnerability and increase assets. Field research observations indicated that group savings was prevalent in Lira, with the motivation of buffering against risks and to protect essential assets. Group savings emerged as the major source of accessing loans so that households do not have to resort to selling crucial livelihood assets such as land or livestock which could expose them to chronic poverty (Ellis 1998). Consistent with Benda's (20013) study among post-conflict households in Rwanda, group savings in post-conflict Lira not only addresses the gap in access to credit but also reinforces social capital and engenders cooperation among households because they promotes frequent interactions necessary for and building trust and networks.

Table 4.12. Multinomial logistic regression of loan with household characteristics

	Independent Variables	Exp (B)	S.E.
Model 1	*Total Network Size*		
(20.0+)	Large (3-5 people)	2.498**	0.287
	Sex of Household Head		
	Male	1.32	0.430
	Education Level of Household Head		
	(8 or more years)	2.305*	0.438
Model 2	*Non-relatives Network*		
(20.0+)	Large (3-5 people)	4.844***	0.338
	Land Cultivated (acres)		
	≥5.0 acres	1.216	0.296

a. The reference category is: 1 (0-15000 UGX)
* Significant at p < .10 ** significant at p < .05 *** significant at p < .01

Table 4.13. Multinomial logistic regression of expenditure with household characteristics

	Independent Variables	Exp (B)	S.E.
Model 3	*Total Network Size*		
(52.0 - 122.0)	Large (3-5 people)	1.817*	0.351
	Education Level of Household Head		
	(8 or more years)	1.772	0.365
	Network Size		
(123.0 +)	Large (3-5 people)	4.282***	0.363
	Education Level of Household Head		
	(8 or more years)	2.663**	0.400
Model 4	*Non-relative Network*		
(52.0 - 122.0)	Large (3-5 people)	1.472	0.349
	Land Cultivated (acres)		
	(≥5 acres)	1.5562	0.363
	Livestock (standardize units)		
	High (≥1.0)	0.808	0.341
(123.0 +)	*Non-relative Network*		
	Large (3-5 people)	1.603	0.369
	Land Cultivated (acres)		
	(≥5 acres)	3.325**	0.365
	Livestock (standardized units)		
	High (≥1.0)	1.902*	0.360

a. The reference category is: 1 (0-15000 UGX)
* Significant at p < .10 ** significant at p < .05 *** significant at p < .01

Conclusion

The purpose of this study was to examine the strategies used by households to address challenges associated with access to financial capital in post-conflict development settings. In particular, the aim of this research was to investigate how social capital affects access to credit among formerly-displaced farm households in Lira. The research also examined the contribution of socio-demographic and socioeconomic factors that may differentiate households in terms of levels of financial capital accessed. Research has shown that financial services through formal institutions in Uganda are limited and the poorest people are excluded from mainstream financial services (USAID 2007; World Bank 2009). Consistent with this finding, this research revealed that access to credit through formal institutions was non-existent in Lira and the most common source of credit for the rural poor was through their social networks involving relatives, friends, and informal self-help credit associations.

As hypothesized, social capital emerged as one of the key elements for leveraging financial capital. In particular, respondents with large non-relative networks (bridging social capital) have higher access to loans or credit, reinforcing the importance of this type of capital. Central to a sustainable livelihoods approach is the recognition of people's strengths and initiative to address their problems. Regardless of the impact of war, results of this research have confirmed that poor people in Lira are resourceful and engaged in an array of activities to enhance their own resources, mitigate risk, and plan for a brighter future. For example, given insufficient healthcare services in the area, households relied on their financial associations to pay for hospital bills and school fees for their children, thereby enhancing their human capital as well.

Consistent with other studies (Mpuga 2010; Obaa 2011), the research revealed the influence of socio-demographic and socioeconomic factors on access to financial capital. In particular, gender and educational levels of households have significant associations with access to loans. Male and more educated household heads accessed larger loans compared to female and less-educated household heads, indicating the need for understanding complex social dynamics and cultural factors that shape access to and control over resources so that appropriate programs can be devised. Similarly, land and livestock ownership (indicators of relative wealth) were associated with greater access to loans. This suggests that lenders may consider relatively wealthier households to have a higher repayment capacity and possess the necessary collateral for loans. Field research observations indicate heterogeneity among people participating in savings groups in Lira. Given that female household heads are characterized by limited access to resources, the inclusive nature of savings associations among farm households in Lira is therefore an important opportunity for vulnerable groups to expand networks, thus increasing their chances of accessing financial capital and social support.

Regarding theoretical and policy implications for rural development programs, utilization of the sustainable livelihoods approach and social capital have made it possible to focus on peoples' resources and initiatives, and to analyze the inter-relationships among different types of livelihood resources and social capital in post-conflict settings. The use of both quantitative and qualitative approaches has provided a better understanding of strategies used by farm households to address challenges associated with restricted access to loans in the area. In the absence of credit services from formal institutions, group loans are prevalent among formerly displaced farm households in Lira. Although funds generated may be insufficient to address all the financial needs of rural households, financial associations are important resource in the

livelihoods of the poor people. Revitalization of agriculture tends to be the predominant focus of post-conflict development; a holistic and people-centered approach to understanding livelihood resources and enhancing existing initiatives such as group savings can be a sustainable way to improve conditions in post-conflict settings. The results of this study suggest that development organizations can make significant improvements in increasing access to financial capital by recognizing and supporting people's initiatives and providing appropriate supports while making sure that vulnerable people, particularly female household heads are included. This will enable the poorest people, particularly war-impacted households to increase agricultural production and start enterprises necessary for sustainable livelihoods and long-term development. Financial training such as the CARE Village Savings approach that promotes and enhances poor people's capacity to manage their own generated funds through resource pooling is the right step towards achieving sustainable financial services for the rural poor in developing countries.

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CHAPTER FIVE. GENERAL CONCLUSION

Summary of findings and conclusions

The primary aim of this study was to examine the role of social capital and the impact of agricultural technical assistance on access to productive resources and food security at the household level among formerly-displaced farm households in Lira, northern Uganda. The study also examined the contribution of socio-demographic and socioeconomic factors that mediate access to resources and differentiate households in terms of livelihood outcomes. This dissertation research project contains three papers that will be separately published in different journals. This chapter summarizes the findings and highlights important theoretical and policy implications for effective post-conflict development intervention programs.

Violent conflict, which is prevalent in sub-Saharan Africa, has worsened poverty and emerged as one of the major causes of food insecurity in the sub-continent. Northern Uganda has experienced two decades of violent conflict between the Lord's Resistance Army (LRA) and the Government of Uganda, which resulted in enormous loss of human life and destruction of community resources. The war forcefully displaced more than a million people from their homes and destroyed their livelihoods (IDMC 2010). The agreement signed in 2006 affords peace and stability, and a majority of displaced households have either returned to their areas of origin or resettled in new locations. Returning to areas devastated by conflict has not been easy, however, and inadequate access to resources has aggravated food insecurity and other basic services such as health care continue to be inadequate. Governmental agencies and humanitarian organizations have initiated a number of interventions to improve the conditions for returning households, yet their effectiveness depends on an in-depth understanding of the local context and resources to

transition from emergency assistance to long-term development in order to promote sustainable livelihoods.

This study has added to the findings of previous research and demonstrates the importance of social capital in rural development (Martin et al. 2004; Sseguya 2009; Obaa 2011). Despite the impact of war, social capital has emerged as a key element for accessing resources and improving food security and livelihoods in post-conflict Lira. Land, the single most important livelihood resource in the area, is limited. The results of this study indicate that about half of the respondents accessed additional land to increase production by renting from their relatives, friends, and neighbors. We found that respondents having higher levels of social capital accessed more land, consistent with other studies. In post-conflict recovery, agricultural revitalization tends to be the dominant strategy for re-constructing rural livelihoods; training and provision of tools and seeds are important components of agricultural technical assistance. Households that received training are expected to exhibit enhanced livelihood outcomes through improved farming knowledge and increases in agricultural yields.

Consistent with this expectation, we found a positive association between agricultural technical assistance received and ownership of livestock, suggesting that participation in training impacts resources and assets. Agricultural technical assistance received was not directly linked to food security outcomes. Given the labor-intensive nature of farming in the area, access to labor is crucial for households to bring more land into production and keep up with weeding and other farm work. We found a high level of cooperation among the farmers, and most respondents reported having access to labor through their peers when needed. During the field research, we observed that group work activities were common in the area. Access to production and marketing information is one of the challenges facing farmers in Africa. However, results

indicate that farmers in Lira were able to access information through a variety of sources as well as through extension services.

Consistent with other research, social capital positively predicts food security in Lira. Our results indicate that respondents possessing higher levels of social capital in terms of social networks had better food security outcomes compared to those having smaller social networks. Also in support of previous studies (Obaa 2011; WFP 2013), both quantitative and qualitative analyses indicate that food insecurity was prevalent in Lira district and access to food (rather than its availability) was the main challenge facing households (WFP 2013). Formerly-displaced farm households were impoverished by decades of war and have limited resources necessary for accessing food in the market, while agricultural production was relatively low. Given the lack of resources, social capital becomes the most important resource for leveraging access to food. Utilizing quantitative and qualitative analyses, this study revealed that households with a larger social network are more food secure. In Africa, social capital represents an important safety net and households having better social connections may access food and other resources through these social networks. Despite its strong association with food security, social capital is insufficient to ensure sustainable food security at the household level. Given relatively small landholdings in the area, access to agricultural resources, including appropriate fertilizers, herbicides and pesticides, as well as knowledge about improved farming practices and technologies is important for sustainable agricultural intensification to improve food security. Despite a high degree of cooperation among farmers in terms of assisting each other with farm work, access to labor saving technology is vital for opening up land at timely planting. Adequate knowledge about nutrition is also critical for achieving sustainable food security in post-conflict settings. Education or human capital is crucial for sustainable livelihoods and is linked to food

security. Although formal education is vibrant and inclusive in Uganda, adult education should be provided to formerly displaced households to improve conditions and well-being. Food security intervention programs should understand the local context and devise mechanisms to reach the most vulnerable populations. This might include collaboration among organizations that provide agricultural technical assistance and other services in the area to avoid duplication of services.

Due to undeveloped financial markets, access to credit that can be put into productive use to enhance other forms of capital is restricted in Uganda, and Lira is no exception. Previous studies have shown that financial services through formal institutions in Uganda are limited and the poorest people are excluded from mainstream financial services (USAID 2007; World Bank 2009). The Government of Uganda has initiated programs, including the Plan for Modernization of Agriculture, which aimed to create an environment conducive for rural households to access credit and increase agricultural production (MFPED 2001). However, this program has not sufficiently addressed the gap in access to credit among the poor. Likewise, microfinance programs in Uganda have not reached the poorest people, particularly those in rural areas. Results of this study indicate that access to credit from formal institutions was non-existent in Lira. Households depend on their networks and the pooling of resources to generate money to address gaps in financial services and mitigate risks.

Our analysis revealed that social capital is the main predictor for accessing larger loans with respondents that possessed higher levels of social capital were accessing larger loans compared to those with small networks. As in other settings, group savings emerged as the major source of accessing loans needed to cope with emergencies and for meeting other important needs in Lira. The implication is that social capital plays a crucial role in protecting assets

because the unavailability of loans that can be used during emergencies may compel people to sell crucial livelihood assets such as land or livestock, which could ultimately leave them vulnerable to chronic poverty (Ellis 1998).

Another component of this study was to examine socio-demographic and socioeconomic factors that may influence access to productive resources and contribute to food security in the area. Among the demographic factors, educational level of households predicts agricultural technical assistance received, with better educated household heads benefiting more from the project in terms of training received. Further, we found that food security was better at higher educational levels of household head, supporting other studies (Martin et al. 2004). Regarding access to financial capital, gender and educational level of household heads predict loans accessed, with male and more educated household heads accessing larger loans. The implication of this finding is that female-headed households (24% of the returned households) who were disproportionately represented among the less educated group are more prone to food insecurity than their male-headed household counterparts. There was no significant association observed between age and access to resources or food security. The age variable was grouped and dichotomized due to statistical constraints explained earlier, which could have masked underlying differences among households.

Overall, this study added to other research in establishing the link between social capital and access to the productive resources necessary for achieving food security in post-conflict settings. Together, the findings demonstrate that poor people are resourceful and strategically use available local assets in combination with external support to manage dynamic livelihoods, highlighting the need for a paradigm shift from supply-driven and emergency-based assistance to a long term development approach of strengthening and supporting household capabilities

(Chambers and Conway 1992; Longly et al. 2007). Results of this study suggest that participation in groups can be an important mechanism for overcoming challenges associated with power differentials encoded in social and cultural relations (such as gender relations) that mediate resource access and may determine livelihood outcomes.

Theoretical implications

Bourdieu (1986) conceived of social capital at the individual level, emphasizing the gain derived from social networks as the motivation for people to participate. He argued that the volume of social capital possessed is contingent upon the size of the network. Focusing on the household as the unit of analysis, this study has drawn on this view and examined networks to understand social capital, particularly the component of social capital referred to as structural social capital which characterizes organizations and networks that facilitate collective action (Uphoff 2000). As other scholars have used and advocated (Burt 1997; Lin 1999), social networks are valid as a proxy to measure structural social capital.

Policy implications

In terms of policy implications, recent recognition of the importance of social capital as an important tool for poverty reduction has been manifested in group-based approaches to deliver extension assistance. This study indicates that consideration of social network in design of post-conflict development interventions can be instrumental for increasing resource access and improving food security. This suggests that policymakers and other stakeholders should focus more on supporting people's initiatives to help themselves and strengthen the social networks that are crucial for leveraging resources and improving livelihoods and asset-building.

External support tends to assume homogeneity among poor people and overlook social factors that shape access to resources. A common feature of violent conflict is the erosion of social values and destruction of community safety nets which often leads to social breakdown, making post-conflict recovery difficult. Unlike normal rural development settings, formerly displaced households have to adjust and reconstruct their livelihoods with few resources while restoring and strengthening their social capital by working together and pooling resources.

It is important for development organizations to understand these factors to provide programs that reach the most vulnerable populations. This study has demonstrated that socio-demographic and socioeconomic characteristics of households determine access to key resources and food security outcomes. For example, human capital in terms of education plays a key role in accessing resources. In Lira, female household heads were disproportionately represented among the less educated groups, thus having restricted access to resources and being more prone to food insecurity. This suggests the need for programs and adult literacy education that targets women in order to help empower the most vulnerable groups. Development programs that fail to understand and recognize local resources and assume homogeneity among the poor, particularly in post-conflict communities, may unintentionally bypass the appropriate target group and increase inequality. Finally, despite the negative impact of war and the breakdown of social structure and safety nets, social capital is prevalent in Lira and remained the most important resource that can be enhanced to rebuild assets and improve livelihoods and well-being. Efforts to ensure long-term development in post-conflict settings depend on recognizing people's initiative and strengthening their social networks, rather than merely focusing on what people lack and need.

Limitations and recommendations for future research

This study has a number of limitations. Being largely cross-sectional in nature, the study does not provide a strong basis for establishing causality or continuity of the phenomenon under investigation. Therefore, the study may not fully explain factors influencing access to resources and food security in post-conflict settings. For example, it is not possible to determine the causal direction and explanation for the positive association between access to resources and network size since networks and resources may reinforce one another. The sample size was also not sufficiently large to use other statistical methods for estimating variations among households. The grouping of responses into categories might have weakened the power of prediction and masked important differences among the respondents. International measures of food security which emphasize access may be insufficient to understand food security situations in different communities because access to food may not translate into consumption due to cultural reasons and intra-household relations.

Regarding the need for future research, the impact of agricultural technical assistance in terms of improved farming practices was not clear and field research observations have not indicated clear evidence of the adoption of new farming practices and technology. Given relatively small landholdings and climate change, sustainable agricultural intensification is important for sustainable livelihoods and well-being in Lira. Therefore, further research is needed to identify the factors that promote or hinder adoption of new farming practices in the area. Cultural factors (including intra-household relations) may impact food consumption, so that further research is also needed to explore the influence of cultural capital on food preparation and consumption. Because one of the central components of the sustainable livelihoods approach is the importance of diverse livelihood strategies, there is a need to understand other livelihood

strategies in post-conflict settings, including the role of casual labor and trade, and how rural households invest their resources and access markets.

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(Appendix 1)[i] Household Questionnaire (2011)

Questionnaire ID: _____Date_____Name of Enumerator _____
Village _____ Parish/Sub-county _____/_____

Section 1. Household demographic and socioeconomic characteristics:

1.1 Name of Household Head _____

1.2 Sex of Household Head ____ (1. Male 2. Female).

1.2a Name of person interviewed if different from household head_____
1.2b Relation to household head ___ 1. Husband. 2. Wife. 3. Child. 4. Others (specify) _____

1.3 **Age of Household Head** _____ Years. **13a Age of person interviewed** _____ Years.

1.4 Clan of Household Head _____ 1.4a Clan of person interviewed _____

1.5 Religion of household head _____ 1.5a Religion of person interviewed _____

1. Roman Catholic 2. Protestant 3. Pentecostal 4. Islam 5. Seven Day Adventist 6. Other (Specify) _____

1.6 How many people live in the household?_____

1.7 How many of the household members are in the following age categories?

Elders (60 +)	Adult Males (18–59)	Adult Females (18–59)	Children (5 – 17)	Young Children (under 5)

1.8 Marital status of the household head?___**1.8a Marital status of person interviewed __**

1. Never Married 2. Married 3. Separated 4. Widow/Widower 5. Polygamous

1.9 What is the name of displacement camp or place where your household lived prior to returning to this village? Name _____(1. Camp. 2. Town) _____

1.10 For how many years did the household live in displacement camp or place? ___

1.11 When did your household return to this village? Month _____Year _____

1.12 Did the household live in this village prior to displacement?_____ (1.Yes 2. No)

1.13. Educational levels of all the people in household, starting with the household head and spouse:

	Name	*Relation to Household Head* *1.Child* *2.Relative* *3.Others*	*Educational Level (see codes below)*
1 (Head)			
2 (Spouse)			
3			
4			
5			
6			
7			
8			
9			
10			

Codes: *1. None 2. Lower Primary 3. Upper Primary 4. Ordinary Level*

5. Advanced Level 6. Vocational Level 7. University Level

1.14 Are there children in your household between the **ages of 4-18** who are not going to school currently?____(1. Yes. 2. No)

1.15 If yes, why not? (**Circle all applicable***). 1. Unable to pay school fee. 2. Disability. 3. School distance. 4. Others (specify)* _____

1.16 How many children are attending school currently? _____

1.17 In total, how much do you pay per term or per year **for all school-age children** who are currently enrolled in school? ____ per term ____ per year

Section 2 – Household Level of Participation, Access and Utilization of VEDCO Support or Other Organization Support (s):

2.1 What are the names of household members who belong to VEDCO groups or other groups beside VEDCO? (One member may participate in more than one group; listed each on a separate line)

	Name of Household Member	Membership: 1. Yes 2. No	Type of Group: (codes below)	Role in Group: 1. Member 2. Leader 3. Other	Contribution: (see code below)	Attendance: 1. Rarely 2. Sometimes 3. Often
1						
2						
3						
4						
5						
6						

- Codes for Group Type: 1. VEDCO Group 2. Other Farmers' Group 3. Credit and Saving within VEDCO Group 4. Credit and Saving Outside VEDCO Group. 5. Religious Group 6. Cultural (Drama, Arts) Group 6. Burial/Festivities Group 7. Marketing Association 8. Other (Specify) ___-
Codes for Contribution: 1. No contribution 2. Entrance/Subscription Fee 3. Annual Fee 4. Both Entrance/subscription Fee and Annual Fee. 5. Labor Contribution. 6. Other (Specify) _____

2.2 If you have a membership in more than one group, name the two groups that are most important to your household's food security (**Use codes on 2.1 for group type**). Group 1:____ Group 2: _____

2.3 How long have you or your household member been a member of the group(s)?

Group 1: ___ months/years Group 2: _____months/years

2.4 Compared to other members of your group, would you say you are less active, more active or like others? Group 1: _____ Group 2: ____ *1. Less active. 2. Like others. 3. More active.*

2.5 How are leaders in these two groups selected? (If household has membership in one group only, ask respondents how leadership in their groups selected) Group 1: ___ Group 2:_____

1. By outside person or entity. 2. Each leader chooses his/her successor. 3. By a small group of members. 4. By decision/vote of all members. 5.Others (Specify) _____

2.6 Would you describe your group leadership as weak, strong, or very strong?
Group 1: _____ Group 2: _____ *1. Weak. 2. Strong. 3. Very strong.*

2.7 Which of the following best describes your feeling about your group leaders selection processes? Group 1: __ Group 2: _____ *1. Unsatisfied. Why?*_____
2. Satisfied. 3. Very satisfied.

2.8 To what extend do you contribute to decision making (***having ideas, suggestions, concerns heard/respected and implemented***) in your group?
Group 1:___ Group 2: ___ *1.To a small extent. 2. To a large extent 3. Other (specify):*_____

2.9 To what extent has your membership in the group(s) improved your household food security?
1.To a small extent 2. To a large extent. 3. Other (specify)_____

2.10 Which of the following best describes how membership in these groups improved your household food security (**Circle all applicable**).

1. Made connections and share information with other group members about farming.
2. Made connections and share information about marketing with other group members.
3. Saved money for future use.
4. Feel secure because can borrow money from group saving during crises.
5. Others _____

2.11 Which of the following characteristics are true about your group members?

		Group 1	Group 2
1	Most from the same village		
2	Most from the same family/clan		
3	Most from same religion and denomination		
4	Most from same sex		
5	Most from same age range		
6	Most from the same educational level		
7	Most from same income level		

Codes: *1. Yes 2. No*

2.12 Thinking about your participation in VEDCO group activities in the **last six months**, such as, training sessions on land preparation, practical demonstrations of farming practices, and group meetings would say that you participated:____ *1. Rarely 2. Sometimes 3. Often*

2.13 Please **rate** each of the following training activities in order of their importance for your farming and household's food security: ____Training sessions through lecture.

_____ practical demonstrations. ____ learning from other farmers or neighbors.

____talking with VEDCO field extension workers. ____talking with Community Based Trainer. *1. Not important 2. Somewhat important. 3. Very important. 4. Extremely important. 5. Other (specify)*_____

2.14 Thinking about people in your VEDCO-assisted group, how many of them did you know before the project training and support began? ____ *1. None 2. Less Than Half. 3. About Half. 4. More Than Half. 5. All of Them.*

2.15 Compared to the time before joining the VEDCO group, how has your network changed in terms of the number of people with whom you regularly talk and share ideas?

1. Smaller 2. About the Same 3. Larger 4. Much Larger _____

2.16 Would you say that the change in your network due to participation in VEDCO activities is: _____ *1. Important for my household food security. 2. Very important for my household food security. 3. Extremely important for my household food security. 4. Others (specify)* _____

2.17 What types of training did you received from VEDCO? (**Circle all applicable**).

1. Land preparation techniques. 2. Planting in line and crop spacing.
*3. Manure (**cow dung, crop residue etc.**) application. 4. Fertilizer (**chemical**) application.*
*5. Weed control using herbicide (**chemical**). 6. Weed control using natural processes.*
7. Proper drying and crop storage techniques. 8. Marketing skills. 9. Others (specify) _____

2.18 What other support did your household receive from VEDCO in the **last 12 months**? (**Circle all applicable).** *1. Seeds. 2. Hoes. 3. Pangas. 4. Axes. 5. Others (specify) _*

2.19 In the **last 6 months**, did you face any challenges that affect your participation in VEDCO group activities? _____ 1. Yes 2. No

2.20 If yes, explain _____

Section 3 - Adoption of New Farming Practices and Technologies

3.1 In your view, which new or improved farming practices and technologies have you learned from VEDCO training? **(Circle all applicable***). 1. Land preparation techniques. 2. Bush fallow. 3. Proper crop spacing 4. Proper crop storage. 5. Others (specify)* _____

3.2. Thinking about the main crops your household planted **before the war and displacement**, what farming practices and technologies did you use?

*Crop 1:*_____*Practice(s):*_____
*Crop 2:*_____*Practice(s):*_____
*Crop 3:*_____*Practice(s):*_____

3.3 Thinking about the main crops your households planted in the **last 12 months** or after joining VEDCO group, what farming practices and technologies did you use?

*Crop 1:*_____*Practice(s):* _____
*Crop 2:*_____*Practice(s):*_____
*Crop 3:*_____*Practice(s):*_____

3.4 Of the trainings that you received from VEDCO, which **three component**(s) are most beneficial in your farming? (**Use codes on 3.1 above for the components**). ____

3.5 Did your household adopt any new crops that you did not grow before the training?
_____ 1.Yes 2. No

3.6 If yes, give the name of the new crops _____ _____ _____ _____ _____

3.7 If No, Why not? _____

3.8 Name four main crops that your household grew in the **last two planting seasons**.

1._____ 2. _____ 3. _____ 4. _____

3.9 In the **last two planting seasons**, did these four main crops grow less than expected, grow as expected, or grow better than expected? _____ *1. Grew Less Than Expected 2. Grew as Expected (**skip Qs 3.10 - 3.12**) 3. Grew Better Than Expected*

3.10 If crops grew **less than expected**, reason (s) (**Circle all applicable**).*1. Late or no enough rain. 2. Insect attack. 3. Weed problem and shortage of labor. 4. Infertile land. 5. Inappropriate farming techniques. 6. Late planting. 7. Flood or too much rain. 8. Others (specify)*

_____

3.11 If crops grew better than expected, reason (s) (**Circle all applicable**). *1. Timely and enough rain. 2. Use of new farming techniques. 3. More labor to prepare land and control weed. 4. Fertilizer use. 5. Herbicide use. 6. Manure application. 7. Crop rotation. 8. Crop spacing. 9. Timely land preparation and planting. 10. Bush fallow 11. Others (specify)*

3.12 From whom did your household learn these farming practices techniques? (**circle all applicable**) *1. Farming experience before war and displacement. 2. VEDCO. 3. Group Members. 4. Relative (kin). 5. Neighbors. 6. Other Organizations. 7. Others (specify)* _____

3.13 Thinking about your farming practices before you join VEDCO training, would you say you were lacking important knowledge about land management or crops planting techniques? _____ *1. Yes. 2. No*

3.14 If yes, what specific knowledge did you lack? (**Circle all applicable**). *1. Manure application. 2. Timely land preparation and planting. 3. Appropriate crop spacing and line planting. 4. Appropriate crops drying and storage. 5. Others (specify)* _____

3.15 To what extent has your household food security improved as result of implementing the knowledge you gained from VEDCO training? *1. To a smaller extent. 2. To a larger extent 3. Other (specify)* _____

3.16 What are the **three most important** VEDCO activities for improving your household food security? (**Circle**). *1. Group formation. 2. Production Training 3. Marketing Training. 4. Input provision (seeds and tools). 5. Others (specify)*_____

Section 4 - Household Resources Access and Levels of Social Capital

Sub-section 1 – Land Access

4.1 In total, how much land (in acres) does this household have rights to use/farm?____.__ acres

4.2 Of the above land, how many acres do you currently use? ____.__ acres.

4.3 Compared to the **time before the war and displacement** has the size of your land decreased, increased or remained the same? ____ *1. Decreased 2. Remained the same 3. Increased*

4.4 If decreased why? (**Circle all applicable**). *1. Gave some land relative or friend. 2. Someone claimed part of the land. 3. Sold some land. 4. Gave some land out to church.*

5. Others (specify) _____

4.5 If increased, why? *1. Bought some land. 2. Given some land by relative or friend.*

*3.Others (specify)*_____

4.6 Compared to other people in your village, would you say your land is smaller, the same size as most people, or larger the most people's? ____ *1. Smaller. 2. Same as most people in the village. 3. Larger*

4.7 Do you rent land from other people for farming purposes? _____ (1. Yes 2. No)

4.8 If no, why not? (**Circle all applicable**). 1. Have enough land. 2. Cannot afford to rent land. *3. There is no land available to rent. 4. Others (specify*) _____

4.9 If yes, how much do you rent? ____.__ acres

4.10 In total, how much do you pay for renting the land? ____ per season ___ per year

4.11 What are the terms of contract or conditions of renting the land? (**Circle all applicable**). *1. Payment made before harvest. 2. Only seasonal crop can be grown on the land. 3. Use of chemicals on the land not allowed. 4. Others (specify)* _____

4.12 Please give the following information about the person(s) / entities from whom your household rents land *(Write up to five names. If the household rents land from more than five sources, ask the respond to estimate the additional number of people from whom the household rents land).*

	Name	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head:	Occupation	Level of Satisfaction of Contract Terms
1						
2						
3						
4						
5						
6	*Write the additional number of people from whom the household rents land* _____					

- ***Code for 'Relationship to household head'***: 1. Relative (Kin) 2. Neighbor 3. Friend 4. Extension worker 5. Group member 6. Other (specify)
- ***Code for 'Occupation'***: 1. Farmer 2. Trader 3. Other (specify) _____
- ***Code for 'Level of Satisfaction with Contract Terms'***: 1. Unsatisfied 2. Satisfied
  If unsatisfied, state why _____

4.13 Does your household rent land out to other farmers? _____ (1. Yes. 2. No).

4.14 If yes, how much do you rent out? ____.__ acres

4. 15 To whom do you rent the land out? (**Circle all applicable**). *1. Relative (kin). 2. Friend. 3. Neighbor. 4 an Organization. 5. Others (specify)*_____

Sub-section 2 – Labor Access

4.16 In the **last two seasons**, did your household receive any assistance from any person outside this household with farm work during busy times? **_____** (1. Yes 2. No)

4.17 If yes, please give the following information about the person(s) from who you received assistance *(Write up to five names. If the household got labor assistance from more than five sources, ask the respondent to estimate the additional number of people from whom the household got assistance).*

			Characteristics of source of support		
	Name	Type of labor assistance received	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head:
1					
2					
3					
4					
5					
6	*Write additional number of people from whom the household got labor assistance ____*				

- ***Codes for 'Types of Assistance'**: 1. Labor Exchange 2. Unpaid 3. Hired. 4. Other (specify)____*
- ***Codes for 'Relationship to the household'**: 1. Relative. 2. Neighbor 3. Friend. 4. Extension worker 5. Group member. 6. Whole group. 7. Other (specify) _____*

4.18 If your household grew and harvested any of the crops below in the **two last seasons**, give the following information.

Crop	Size of Plot Planted (Acres)	Production in Kgs	Amount Sold in Kgs	Where/How Sold (See code below)
1. Maize				
2. Cassava				
3. Millet				
4. Sorghum				
5. Sweet potatoes				
6. Beans				
7. Groundnuts				
8. Cotton				
9. Sunflower				
10. Simsim (Sesame)				
Others				

***Codes for 'Where/How Was It Sold'**: 1. Sold at Farmgate 2. Transported to the Market 3. Some Sold at Farmgate and some Transported to the Market 4. Other (specify) _____*

Sub – section 3 – Information Access:

4.19 Did your household buy any agriculture inputs (hoes, seeds, fertilizers, herbicide etc.) in the **last 12 months?** ____ (*1.Yes. 2. No*)

4.20 Thinking about inputs and marketing of your crops, what was the most important information that you sought in the **last 6 months**? (**circle all applicable**).

1. Input price. 2. Crop selling price. 3. Production information. 4. Others (specify) _____

4.21 From whom or what did you get the information? (**Circle all applicable**)

1. VEDCO. 2. Group members. 3. Radio. 4. Local Government Extension Workers. 5. Traders. 6. Local Council (LCs). 7. Other (specify) _____

4.22 Did you discuss or share any of the information received from these sources with anybody? __ *1. Yes 2. No*

4.23 If yes, please give the following information about the person(s) with whom you discussed this information. *(Write up to five names. If the household talked to more than five sources, ask the respond to estimate the additional number of people with whom the household discussed this information).*

			Characteristics of Source of Support	
	Name	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head:
1				
2				
3				
4				
5				
6	*Write additional number of people with whom household discussed information* _____			

Code for 'Relationship to the household': *1. Relative (Kin) 2. Neighbor 3. Friend 4. Extension worker 5. Group member 6. Other (specify)* _____

4.24 Among those you talked to, who gave you valuable information? (**Use codes on 4.21**) ____

4.25 Before you grew the crops that you have sold, did you get information from any source? ___ *1. Yes. 2. No*

4.26 What specific information did you seek? *1. Market price. 2. Production information. 3. Others (specify)* _____

4.27 From whom or what did you get the information? (**Circle all that are applicable**)

1. VEDCO. 2. Group members. 3. Radio. 4. Local Government Extension Workers. 5. Traders. 6. Local Council (LCs). 7. Friend or neighbor. 8. Other (specify) _____

4.28 Did you discuss or share any of the information you obtained from these sources with anybody? ___ *1. Yes. 2. No*

4.29 If yes, give the following information about the person (s) with whom you discussed these information *(Write up to five names. If the household talked to more than five sources, ask the respond to estimate the additional number of people to whom the household got information).*

			Characteristics of Source of Information	
	Name	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head:
1				
2				
3				
4				
5				
6	*Write additional number of people from whom household discussed*_____			

Code for 'Relationship to the household': *1. Relative (Kin). 2. Group members. 3. Neighbor 4. Friend 5. Extension worker 6. Group member 7. Other (specify)* _____

4.30 Of those who assisted you with ***information on marketing***, who gave you the most valuable information? (*Ask the respondent to rank **three** persons/entities in order of importance*)
1. _____ 2. _____ 3 _____

4.31 Of those who assisted you with ***information on production***, who gave you the most valuable information (*Ask the respondent to rank **three** persons/entities in order of importance*)
1. _____ 2. _____ 3. _____

Sub–section 5- Credit Access

4.32 Did you or any member in your household borrow money in **last 12 months**?_____ 1. Yes. 2. No

4.33 If no, why not? (**Circle all applicable**). *1. Did not need to borrow money. 2. Nowhere to borrow money. 3. Cannot afford interest rate. 4. Have no means to payback loan. 4. Others (specify)* _____

4.34 If yes, please give the following information about the person(s)/entity from whom you mostly borrowed. (*Write up to five names. If the household borrowed from more than five sources, ask the respondent to estimate the additional number of people/entities from whom they borrowed money)*

			Characteristics of Source of Borrowing	
	Name	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head
1				
2				
3				
4				
5				
6	*Write additional number of people from whom household can borrow money*_____			

Codes for 'Relationship to the household': 1. Relative (Kin) 2.Whole group 3. Neighbor 4. Friend 5. Extension Worker 6. Group Member 7. Other (specify) _____

4.35a Did you pay any interest on the money you borrowed? ____ 1. Yes 2. No

4.35b If yes, did you pay the interest in _____: (1) cash, (2) crops, or (3) something else (specify)?_____

4.36 If yes, amount borrowed _____ amount paid in interest _____ period of payment _____ interest _____ per/

4.37 In your view, would you say the interest you paid for the money you borrowed was low, high or very high?_____ *1. Low. 2. High. 3. Very high.*

4.38 What did you use the money you borrowed for? *1. Paid school fee for children.*

2. Paid for hospital or medication. 3. Hired labor or bought inputs (hoes, seeds, fertilizers, herbicides). 4. Burial expense. 5. Others (specify) _____

4.39 During the **past 6 months or past two planting seasons**, have you (or any other adult in this household) *<u>received</u>* any **gift/free money** from a person who is not living here as a member of your household?_____ (1. Yes 2. No).

4.40 If yes, give the following information about the person(s) from whom you received the **gift/free money**? *(Write up to five names. If the household received from more than five sources, ask the respond to estimate the additional number of people from whom the household received money).*

			Characteristics of source of support	
	Name	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relationship to Household Head:
1				
2				
3				
4				
5				
6	*Write additional number of people from whom household received money __*			

Code for '***Relationship to the household'***: 1. Relative (Kin) 2. Neighbor 3. Friend 4. Extension worker 5. Group member 6. Other (specify) _____

4.41 What did the money your household received use for? (**Circle all applicable**)
1. Paid school fees for children. 2. Bought food. 3. Paid hospital or medication. 4. Hired labor or bought inputs. 5. Burial expenses. 6. Others (specify) _____

4.42 Compared to the **times before the war and displacement,** would you describe your household access to land as difficult, better or no change? ____ 1. Difficult. 2. No change. 3. Better.

4.43 If **difficult** or **better**, why? _____

4.44 Compared to the **time before displacement**, would you describe your household access to information as difficult, better or no change _____*1. Difficult. 2. No change. 3. Better*

4. 45 If **difficult** or **better**, Why? _____

4.46 Households sometimes experience sudden events or crises that significantly affect their food security and well-being. Did this household experience such events or crises during the **past 12 months**? ____ (*1. Yes. 2. No).*

4.47 If yes, what was/were the event(s) or crises? (**Circle all applicable**). *1. Household head was sick or injured. 2. Household member was sick or injured. 3. Others (specify) ____*

4.48 What action(s) did the household take to deal with these event or crises? (**Circle all applicable**). *1. Sold : Chicken(s) ___ Goat(s) ___ Cow(s) __ 2. land. 3. Borrowed money 4. Others (specify)* _____

4.49 Did your households receive any assistance in dealing with the event(s) or crises? ____ *1. Yes 2. No*

4.50 If yes, please give the following information about person (s) who helped your households during these event(s) or crises. (*Write up to five names. If the household was helped by more than five sources, ask the respond to estimate the additional number of people from whom assisted the household*).

			Characteristics of source of support		
	Name	Assistance Type	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relation to Household Head
1					
2					
3					
4					
5					
6	*Write additional number of people whom helped the household deal with crisis* _____				

***Codes for 'Relationship to the household'**: 1. Relative 2. Whole Group 3. Neighbor 4. Friend 5. Extension Worker 6. Group Member 7. Other (specify)* _____

4.51 Has anyone of your household members become ill or injured to the extent that he/she could not perform normal activities for extended period of time in the last 6 months? *1. Yes 2. No* _____ ***(Skip 4.51 – 4.58)***

4.52 If yes, who was/were ill/injured? _____

4.53 Did the member(s) who was/were ill go to the hospital/clinic?___ (1. Yes 2. No)

4.54 If no, why not? _____

4.55 If yes, how much was the total cost of the hospital/clinic visit and **medication**? ____

4.56 Did anyone assist you with paying for this hospital expenses? ____ (1. Yes 2. No)

4.57 If yes, please give the following information about the person (s) or Entities from whom you received money for hospital/clinic visit and medication cost. (*Write up to five names. If the household received from more than five sources, ask the respond to estimate the additional number of people from whom the household received money)*

			Characteristics of source of support		
	Name	Assistance Type	Gender: 1. Female 2. Male	Residence: 1. Within Village 2. Outside Village	Relation to Household Head:
1					
2					
3					
4					
5					
6	*Write additional number of people whom helped the household deal with crisis* _____				

Code for relationship to the household codes: 1. Relative 2. Whole Group 3. Neighbor
4. Friend 5. Extension Worker 6. Group Member 7. Other (specify)_____
4.58 How far was the hospital/clinic from your village? _____

4.59 Compared to the **time before the war and displacement**, would you say the people in your village are: *1. Less helpful? 2. Same as before? Or 3. More helpful?* _____

4.60 Compared to the **time before the war and displacement**, would you say the leadership system in your village is: ____ *1. Less Effective 2. Same as Before? Or 3. More Effective?*

Section 5– Household Other Assets and Income Sources

5.1 Does your household own any of the following livestock?____ (1. Yes. 2. No)

5.2 If yes, how many of the following livestock does your household currently own?

Chicken	
Goats	
Sheep	

Cattle	
Pigs	
Fish	

5.3 Compared to the **time before war and displacement**, would you say the number of your livestock has decreased, remained the same or increased? _____ *1. Decreased 2. Remained the Same. 3. Increased*

5.4 Compared to the **time before war and displacement**, would you say your household is: _____ *1. Poorer than before war and displacement. 2. No change. 3. Richer than before war and displacement.*

5.5 How many of the following items do your household currently own?

Farm Implements	Number
Hoe	
Machete	
Rake	
Shovel	
Axe	
Slasher	
Cart	
Wheelbarrow	
Ox-plough	

Home Possessions	Number
Radio	
Mobile Phone	
Watch	
Bicycle	
Sofas	
TV	
Motorcycle	
Motor Vehicle	
Others	

5.6 Which of the following are/were the sources of your household's income?

	Income Source	Last 12 Months 1.Yes. 0. No	Before Displacement 1.Yes. 0. No
	Crop sales		
	Livestock sales		
	Casual labor in agriculture		
	Casual labor (non-agricultural)		
	Civil servant		
	Sales of handicrafts		
	Fire wood, charcoal or grass		
	Trade (incl. roadside selling, kiosks)		
	Brick making		
	Remittances		
	Fishing		
	Other (specify)		

5.7 Among the income sources listed above, name and rank the **three main** sources of your household income in the **last 12 months** and **before displacement**

Main Income Source during the Last 12 Months	Main Income Source before Displacement
1.	1.
2.	2.
3.	3.

5.8. How much did you spend on the following items in the **past week** (in Uganda shillings 1000s)?

Item	Maize Meal	Cassava Flour	Beans	Fish	Meat	Chicken	Oil	Salt	Sugar
Weekly value									

Other type of food purchased _____ and value in past week _____

5.9. How much did you spend on the following items in the **past month** (Uganda shillings 1000s)?

Item	Soap	Clothing or Shoes	Medicine, Clinic, Hospital, Healer	School Fees, Books, etc.	Church Mosque	Mobile Phone Airtime, Battery Charge	Transport	Housing Repair, Renovation	Remittance	Pay on Debt	Savings
Monthly value											

Other type of expenditure _____ and value in past month _____

Section 6 – Livelihood Outcomes /Measurement of Food Security

The following statements are about the food eaten in your household in the **past month (four weeks)**, and whether you were able to have or afford the food you needed. [*Codes:* **0. No 1.Yes** Response categories for subsequent questions: **1. Rarely** (once or twice in the past four weeks); **2. Sometimes** (three to ten times in the past four weeks); **3. Often** (more than ten times in the past four weeks)

	Questions referring to Respondent and/or Other Adults in the Household	**Code**
	During the last four weeks (one month), because of lack of money or other resources…	
6.1a	Did you worry that your household would not have enough food?	
6.1b	How often did this happen?	
6.2a	Were you or any household member not able to eat the kinds of foods you preferred?	
6.2b	How often did this happen?	
6.3a	Did you or any household member have to eat a limited variety of foods?	
6.3b	How often did this happen?	
6.4a	Did you or any household member have to eat some foods that you really did not want to eat?	
6.4b	How often did this happen?	
6.5a	Did you or any household member have to eat a smaller meal than you felt you needed?	
6.5b	How often did this happen?	
6.6a	Did you or any other household member have to eat fewer meals in a day?	
6.6b	How often did this happen?	
6.7a	Was there ever no food to eat of any kind in your household?	
6.7b	How often did this happen?	
6.8a	Did you or any household member go to sleep at night hungry because there was not enough food?	
6.8b	How often did this happen?	
6.9a	Did you or any household member go a whole day and night without eating anything because there was not enough food?	
6.9b	How often did this happen?	

6.10 How many meals does your household eat per day? ___ *1. Once per day. 2. Twice per day. 3. Three times per day. 4. Others (specify)* _____

6.11Compared to the rest of the people in this village, would you say you are: __*1. Poorer than others? 2. Like others? Or 3. Richer than most others?*

6.12 Compared to the **times before the war and displacement**, you would you say you were: *1. Poorer than others? ___ 2. Like others? 3. Richer than others?*

6.13 Do you consider your household to be:____ 1. Always food insecure (Not having enough to eat for more than **six** months)? 2. Sometimes food insecure (Not having enough to eat for at least one month but less than **six** months)? 3. Food secure (Having enough to eat throughout the year).

END of the interview **Thank you very much for your participation!**

(Appendix 2)[ii] Household assets (land, livestock, and home possessions) by network size

Variable	Means			p-value for ANOVA
	Smaller network	Larger network	Overall	
Socioeconomic	Acres/standardized units			
Total cultivable land in acres	4.5	6.0	5.3	.004
Livestock units owned	1.3	1.5	1.4	.335
Home possessions (UGX 1000)	218	268	242	.012
N	113	108	221	

(Appendix 3) [iii] Adapted HFIAS Occurrence Question

Questions referring to Respondent and/or Other Adults in the Household		**Code**
During the last four weeks (one month), because of lack of money or other resources…		
6.1a	Did you worry that your household would not have enough food? 0 = No, skip to Q2 , Yes = 1. Q1a. How often this did happen? 1= rarely (1-2 times), 2 = sometimes (3-10 times), 3= often (more than 10 times)	
6.1b	How often did this happen?	
6.2a	Were you or any household member not able to eat the kinds of foods you preferred?	
6.2b	How often did this happen?	
6.3a	Did you or any household member have to eat a limited variety of foods?	
6.3b	How often did this happen?	
6.4a	Did you or any household member have to eat some foods that you really did not want to eat?	
6.4b	How often did this happen?	
6.5a	Did you or any household member have to eat a smaller meal than you felt you needed?	
6.5b	How often did this happen?	
6.6a	Did you or any other household member have to eat fewer meals in a day?	
6.6b	How often did this happen?	
6.7a	Was there ever no food to eat of any kind in your household?	
6.7b	How often did this happen?	
6.8a	Did you or any household member go to sleep at night hungry because there was not enough food?	
6.8b	How often did this happen?	
6.9a	Did you or any household member go a whole day and night without eating anything because there was not enough food?	
6.9b	How often did this happen?	

Source: adapted from Ballard et al. 2011

(Appendix 4)[iv] Meal consumed per day and network size

	Network size			p-value (χ^2)
	Small (0-2) persons	Large (3-5) persons	Overall	
Number of meals per day (%)				
One meal per day	32.7	18.5	25.8	.016
Two meals per day	67.3	81.5	74.2	
N	113	180	221	